MEMBERSHIP FORM

2012

Member since? _____

NAME: _____

ADDRESS: _____

_____

POSTAL CODE: _____

PHONE: _____ **FAX:** _____

EMAIL: _____

Individual/Partnership/Farm Unit: $30/yr (GST included)
Corporate Affiliate: $30/yr (GST included)

Please return to:

Gateway Research Organization
Box 5865
Westlock, Alberta
T7P 2P6

Any questions or comments:

Phone: **780-349-4546**
Fax: **780-349-2012**
Email: **grohome@telus.net**

(OPTIONAL)
My current primary production and/or area of interest is

CROPS
__ Cereal/Oilseed
__ Pulse Crops
__ Other Specialty Crops

LIVESTOCK
__ Pasture Management
__ Livestock Management
__ Forage Production/Mixes

CONSERVATION/ENVIRONMENT
__ Conservation Tillage
__ Riparian Management
__ Manure Management
__ Environmental Farm Plans
__ Pest Management

NON-TRADITIONAL/SPECIALTY PRODUCTION
(i.e. Elk, Alpaca, Organic, Poultry, Hogs, Bison, etc.)

(Specify) _____

Any ideas or suggestions for future research are appreciated:

_____

_____

_____

_____

_____

_____

_____

THANK YOU!

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GATEWAY RESEARCH ORGANIZATION

Our History

Gateway Research Organization was formed from consolidation with the Pembina Forage Association in 1994. The Pembina Forage Association was started in 1975 by local producers interested in pasture management and forage & livestock research. While maintaining its interest in forage & livestock issues, the new organization became more involved in applied research and demonstrations in crops and environmental sustainability.

Our Vision

Gateway Research Organization will be a renowned and respected agriculture research and extension organization that is the preferred source of unbiased farm production information.

Our Mission

Gateway Research Organization provides cost-effective applied agricultural research, demonstration, and extension for producers in order to facilitate greater returns to farms by providing economically and scientifically sound information that enables our clients to make informed decisions.

The Goals of our Organization

1. To increase the profitability of our members.

2. To encourage active participation by local producers.

3. To provide a valuable resource for information transfer and extension to producers.

4. To produce high quality, unbiased, and scientifically sound research.

5. To produce research based on local growing conditions and soil properties.

6. To collaborate with specialists from the agricultural industry, government, and educational institutions.

CHAIRMAN'S REPORT

Keith Taylor
Acting GRO Chairman

Gateway Research Organization strives to provide a variety of applied research projects, and demonstrations in forage, livestock, crops and environmental sustainability. This information is invaluable to the local agricultural producers and we hope that the local unbiased information GRO generates and puts forth to its members has become a reliable decision making tool both for them and the industry as a whole.

We attempt to locate our research sites in locations throughout our membership area and are very thankful for the generosity of our co-operating producers in achieving this. We are also very thankful for the co-operation and donations of the vendors that support our efforts.

Financially, GRO continues to maintain a healthy financial position. We were able to complete the purchase of a new seeding tool which was used effectively this year and is more reflective of the technology we see on local producer's fields. It is our hope to continue to upgrade our equipment on a regular basis so that the relevance of our data can remain first rate and we can expand our areas of research.

On behalf of the board I would like to thank all the members for continuing to support GRO. I would like to thank the staff for their efforts through the year and especially for the well-received summer tour. If you were at the tour I hope it was informative and if you were not I encourage you to attend this year. I would also like to encourage each and every one involved with GRO to feel free to contact any of the staff or directors with suggestions or ideas that would allow the organization to expand our horizons and increase our data for the producers.

Sincerely,

Keith Taylor

Acting GRO Chairman

MANAGER'S REPORT

Megan Foster
Interim Manager

Thank you to all those who made our 2011 season a success. This year we had three main sites which were located in Stony Plain, Neerlandia and Dapp. We also have our Western Forage Testing Trial site which was established in 2010 near Barrhead.

Weather has once again been an obstacle for our plots this year, just as I assume it was for all producers in our area. On average we saw a very dry spring and then the rains coming steady in the later part of the year resulting in flooding and disease emergence.

Thank you to Richard & Darryl Krikke for the donation of land at Neerlandia, Glen Pidsadowski at Dapp, and Kevin & Brian Ratke at Stony Plain, and Ken Anderson at Barrhead.

Weather stations were again put up at all three main sites as well as the heifer pasture and the real data from those stations can be found on page ten of this report.

We are planning three sites again for the coming growing season which will be on Westlock county, Barrhead county and Parkland county. GRO would like to thank the partnering counties for their continued support and guidance with our trials and demonstrations. We are always looking for new trials and varieties for the crop/silage variety testing so if you have an idea or something you would like to see let us know, we would love to hear from you!

GRO would like to thank all our members of our organization for their support. The work we do truly would not be possible without the support of local producers who believe in the value of work that applied research associations provide to the industry.

Sincerely,

Megan Foster

Interim Manager

ARECA REPORT

A year in review...

Message from the Executive Director

Agricultural Research and Extension Council of Alberta

2011 provided significant challenges for excess moisture but then the tap was turned off for a dry harvest. Marketing of barley and wheat poses uncertainty for Alberta producers but will likely offer opportunities for consideration of a new way of business. There has been change within the ARECA member Associations with the loss of Central Peace Conservation Society as a member of ARECA and merger of Southern Alberta Conservation Society and Southern Applied Research Association into Farming Smarter.

For **ARECA,** a strategic planning workshop in July offered the ARECA Board, Association Managers and ARECA representatives an opportunity to discuss where do we go from here. Four areas were highlighted and they include communication, financial training and administration. The **ARECA Board** of Directors convened for three Board meetings plus five being conference calls. Discussion has been about dispersement of Association equipment to other Associations, strategic planning, training fund, participation in FarmTech and membership fees.

A website Committee under the chair of Laura Gibney provided direction for refreshment of the **ARECA website**. Those revisions are being implemented with support from the Associations in terms of content and graphics. Our readership has continued to grow especially since it includes important announcements from Associations.

Regional Variety Trials are under the coordination of Alex Fedko with Alberta Agriculture and Rural Development (ARD) who replaced Gayah Sieusahai this spring. Alex works with ARECA and Associations to ensure the delivery of these trials throughout Alberta. This has ensured that producers can access unbiased, agronomic information for different cereal and pulse cultivars.

This is the last year for the **Regional Silage Variety Trial** with six Associations (Meghan Elsen coordinated the project) reporting on the nutritional value of annual crops for feed (silage, greenfeed and swath grazing). Six nutritional categories are reported including Crude Protein and Total Digestible Nutrients for different cereal cultivars – the information is available in the Alberta Seed Guide (seed.ab.ca). The project has been funded by the Alberta Beef Producers (ABP) and a request for continued funding from ABP is in progress.

ARECA and WCFA partnered with Canadian Rangeland Bison and Spring Creek Ranch to develop a 'made in Alberta solution' by the creation of a branded program that verifies environmental sustainability, animal welfare and food safety using a third party external audit system. With funding from ALMA, this project will review options to develop a system that is an all-encompassing, third party audited system with a consumer recognized brand or seal. This system will provide consumers assurance that issues such as wildlife habitat, rangeland health, riparian habitat, and manure are being managed in a responsible manner and animals are treated humanely from birth to slaughter. This system will also assure customers that food

safety is paramount at every step of production. The project consists of 3 phases with the first phase to be complete by spring, 2012.

The **Energy Conservation and Energy Efficiency** project set out to examine energy use on Alberta grain farms. Two studies examined the relationship of tillage practices and energy consumption. The reports explore Energy Intensity Measures, Energy Output/Energy Input Ratios and Less Tillage Indices. These studies reveal a trend of increasing energy efficiency and related reductions in energy intensity in recent years. These trends are felt to indicate that the economic, environmental and sustainability benefits of energy efficiency are shaping producer decisions.

The potential for variable rate technology (VRT) to impact fertilizer use efficiency was studied on 6 farms in 2009 and 2010. The reports include an economic analysis of the impact of this technology on yield and fertilizer applications. Although the short run economic benefits of VRT are challenging, there are opportunities for gaining economic benefits in the long run. These will come from continuously improving knowledge of how fertilizer performance varies across a given field (under different environmental conditions) and continuously developing capabilities to vary crop inputs according to the specific needs of each unique zone. Funding for this project was provided by the Alberta Government.

ARECA is hosting the first **"PRECISION AG 2.0: The Next Generation"** Conference at the Deerfoot Inn & Casino in Calgary, February 22-23 2012. As GPS and GIS is now everywhere, the next level is to understand how we can use this technology to make a profit and grow the industry. Topics covered will include increased profitability and sustainability, protecting the environment, optimizing your use of agricultural inputs, data management, on-farm research and more. The conference will feature...

■2 full days with over 30 speakers & interactive breakout sessions
■Current information on practices and technologies being adopted by progressive farmers in Western Canada and abroad
■Topics for all skill levels and experience
■35 tradeshow booths dedicated to precision agriculture
■Meet with progressive and innovative practitioners of precision agriculture

ARECA and Associations were involved in planning workshops such as Cow-Calf Economics, Advanced Agronomy Conference and Forage Agronomy Workshop. Additionally, funding applications were developed for swath grazing, data tools for precision ag and field efficiency and obstructions.

With sustainable and effective member associations, ARECA and Associations are respected leaders in applied agriculture research and extension. Our mission is to collaborate with member associations and partners to enhance delivery of reliable and unbiased applied agricultural research and extension. As we go forward in 2012, I wish to thank everyone for their contributions and efforts in 2011 - may we continue to build on our vision.

Ty Faechner, Executive Director

ACKNOWLEDGEMENTS

Gateway Research Organization gratefully acknowledges the generous support of the following businesses, organizations and individuals which have provided financial support, products and/or services to us, as well as partner organizations who have offered their time and expertise to support our projects. The Board of Directors and staff extend their sincere appreciation for the active support of our research programs.

Funding Partners

Alberta Agriculture & Food
Barrhead County
Parkland County
Westlock County

Project Partners

Alberta Barley Commission
Alberta Beef Producers
Alberta Pulse Growers Commission
SeCan

In-Kind Contributors
(Including a combination of goods, land, equipment, product, services, percentage markdowns, etc.)

Agriculture and Agri-Food Canada
Anderson Seed Growers
Bevin McNelly
Curtis Webber
Don Petryshen
Doug Balascak
Flatlander
Glen and Cole Seigle
Greg Thompson
Growth Agri-Coaching – Geoff Doell
Hal Creek Seeds – Glen & Tanya Pidsadowski
John Blotski
Jonk Farms – Nick Jonk
Kevin & Brian Ratke
Monsanto
Merial Canada – Jim Harbidge
Neerlandia Coop
Pickseed Canada
Pioneer Hybrid Seeds
Richard and Daryl Krikke
Rick's Pedigreed Seed – Rick Mueller
Servus Credit Union
Solick Seeds - Len & Kelsey Solick
Tom McMillan
UFA - Andy
Victoor Seed Farms
Viterra Stony Plain (Ken)
Viterra Westlock
Westlock Seed Cleaning Co-op
Westlock County - Jacqueline
Westlock Terminals
William Punko

GATEWAY RESEARCH ORGANIZATION

CONTACT INFORMATION

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STAFF

Interim Manager	Megan Foster	grohome@telus.net
Crops Agronomist	Andrea Fox-Robinson	grocrops@telus.net
Forage & Livestock Agronomist	Megan Foster	groforage@telus.net

2011 BOARD OF DIRECTORS

Chairman	Glen Pidsadowski	(780) 348-2629
Vice Chairman	Keith Taylor	(780) 349-6202
Secretary	Bryan Penno	(780) 674-5343
Treasurer	Scott Hendrickson	(780) 398-2252
Director	Geoff Doell	(780) 307-3423
Director	Bill Chubb	(780) 921-3807
Director	Rick Kuefler	(780) 942-4461
Director	Larry Speers	(780) 698-2242
Director	Jamie Victoor	(780) 914-6027
Director	Ken Anderson	(780) 674-5670

2011 EXTENSION ACTIVITIES

Date	Event	Attendance	Location
February 15	GRO Annual Meeting	45	Westlock
June 29	Canola crop walk	50	Westlock
July 12	GRO Heifer Pasture Tailgate Clinic	30	Dapp
July 20	Parkland County ASB Tour	54	Stony Plain
July 26	Barrhead ASB Tour	77	Neerlandia
July 27	GRO Summer Tour	55	Dapp, Westlock
July 27	Woodlands County ASB Tour	75	Fort Assiniboine
August 4	SeCan Tour	15	Neerlandia
August 5	GRO Neerlandia Plot Site Tour	5	Neerlandia
December 6	Cow/Calfenomics	50	Westlock
December 9	Hal Creek Seeds' Producer Meeting	40	Westlock

As well as planning and participating in the above events, GRO staff attend many agricultural meetings and seminars held locally and provincially, including:

- Workshops
- Commodity group meetings and seminars
- Growers Field Days
- FarmTech
- Western Canadian Grazing Conference
- Forage Agronomy Update
- Lacombe Field Day
- ARECA events

WEATHER STATION DATA

Table 1. Precipitation (mm)

Month	Dapp	Stony Plain
May	1.2 (started May 18)	15.2 (started May 19)
June	106.4	108.4
July	140.2	116.4
August	24.6	34.2
September	17.2	15.8
October	5.0 (until Oct 18)	4.8 (until Oct 10)
TOTAL	**294.6**	**294.8**

Table 2. Average Temperature (°C)

Month	Neerlandia	Dapp	Stony Plain
May	14.1 (started May 17)	13.8 (started May 18)	13.1 (started May 19)
June	13.5	14.2	13.6
July	15.2	15.7	15.4
August	15.2	15.4	15.2
September	12.1	12.5	12.1
October	13.8 (until Oct 11)	8.8 (until Oct 18)	14.5 (until Oct 10)

Data from Weather Stations at GRO Sites.

EXPERIMENTAL PLOT DESIGN

Most of the field trials conducted by GRO contain statistical analyses to give the reader a greater understanding of what went on in the trial and illustrate the reliability of the data. ARM 7 was the program used to conduct this analysis.

Average (Mean): The average or mean of a given set of numbers (e.g. yield) provides a mechanism to gauge the overall performance of the trial. Its usefulness is limited, however, as it may not reflect many important internal trends in the data.

Least Significant Difference (LSD): This value is the boundary between significant and non-significant differences between a pair of means at a given significance level. In this report, the significance level is 95%, or P=0.05. Thus, if the difference between two means is greater than the LSD value, we can be 95% confident that the values are significantly different. This indicates whether a given variety will out-yield another consistently.

Coefficient of Variation (CV): This value, given in %, reflects the magnitude of variation between replicates in a project. A low CV indicates low variability between replicates and therefore higher reliability in the data, whereas a high CV indicates wide variation between replicates and makes it more difficult to distinguish between differences in treatments. A high CV reduces the confidence in the data and can reflect adverse environmental conditions, wide environmental variability, or flaws in experimental design. Tightly grouped measurements make it easier to gauge the consistent performance of a variety and in turn contribute to a greater confidence in distinguishing superior varieties. For yield trials, a CV of less than 20% is considered acceptable.

Means Separation (Ranking): When looking at the data, the reader will notice an alphabetical listing behind each column. These letters denote groups of statistically similar varieties. For example, varieties followed by the letter “a” are not statistically different from each other within the bounds of the trial (at that location in that year). Thus, if two varieties have different yields but are followed by the same letter, they are considered the same, statistically. Each different producer will know what constitutes a “significant” difference for his farm, but this ranking helps give an unbiased idea of how each variety performed compared with the others.

Lodging (0-9): The rating scale for lodging is a 10-point scale with 0 representing perfect stand-ability and 9 equal to severe lodging where pickup was impossible.

Regional Cereal Variety Trials

Co-operators:
Glen Pidsadowski – Dapp – SW 29-61-25 W4
Kevin & Brian Ratke – Stony Plain – SW 36-51-1 W5
Richard and Daryl Krikke – Neerlandia – SE 9-62-3 W5

Objectives

1. To provide yield and agronomic information of current cereal varieties to producers in west central Alberta.
2. To provide yield and agronomic data for use in the Alberta Agriculture publication "Varieties of Cereals and Oilseed Crops for Alberta."

Introduction

Variety selection plays an important role in production management due to the impact that yield, maturity and other agronomic characteristics can have on producer profitability. Variety testing continues to be important in providing producers with information on the performance of newly registered and established varieties. The yield and characteristics of cereals grown in the Northwest region are presented below.

Project Details

Table 1. Plot Information.

	Dapp SW 29-61-25 W4	**Stony Plain** SW 36-51-1 W5	**Neerlandia** SE 9-62-3 W5
Seeding Date	May 18	May 19	May 17
Seeding Specifics	Fabro zero till drill	same	same
	Seeding Depth: 1 inch	same	same
	Seeding Rates:	same	same
	22 plants/ft^2 - 2-Row & 6-Row Barley	same where seeded	same where seeded
	24 plants/ft^2 - HRS & Utility Wheat, Oats	same where seeded	same where seeded
	30 plants/ft^2 - Triticale	same where seeded	same where seeded
	Seed treatment: Raxil	same	same
Fertilizer	75 lbs. N, 30 lbs. P, 30 lbs. K, 15 lbs. S,	same	same
Herbicide	Cereals: Frontline/Axial Oats: Frontline	Cereals: Frontline/Axial Oats: Frontline	Wheat: Infinity/Axial
Harvest Date	Sept 28 Oct 18 (Flax)	Sept 21 (6-row Barley) Sept 28 (Utility Wheat) Sept 29 (HRS Wheat) Sept 30 (2-row Barley, Trit) Oct 10 (Oats)	Oct 11

Results

2-Row Barley – The majority of malt-grade barley produced is two-row. Two-row barley is characterized by having only one fertile spikelet at each node. Six-row barley has three fertile spikelets at each node. This lack of crowding in two-row barley allows for straight, symmetrical kernels with low dormancy; key characteristics essential for malting. The malting process begins by soaking the grain and causing it to germinate. The low dormancy and high seed viability in two-row barley is important for this process.

Table 2. 2-Row Barley Dapp

Variety	Yield bu/ac	Yield % Metcalfe	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
Merit 57	73	128	a	51	35	62	2	1
Ponoka	73	128	a	51	37	67	1	1
CDC Austenson	72	126	a	51	38	63	3	1
Xena	71	123	ab	52	40	66	4	1
TR 07728	70	123	ab	51	41	60	1	1
Champion	66	116	abc	51	36	62	0	1
Bentley	64	111	abc	48	39	65	0	1
Seebe	62	108	abc	51	35	73	1	1
CDC Coalition	62	108	abc	50	33	52	0	1
Gadsby	61	107	abc	52	39	73	1	1.3
Cerveza	61	106	abc	48	34	59	0	1
CDC Meredith	60	106	abc	48	39	61	3	1
HB 08304	60	105	abc	66	34	72	2	1
Major	60	105	abc	47	34	57	2	1
CDC Carter	59	104	abc	62	36	70	6	1
CDC Polarstar	58	102	abc	50	28	65	-2	1
Norman	58	102	abc	49	30	59	1	1
CDC Kindersley	58	102	abc	50	31	63	0	1
AC Metcalfe	57	100	abc	50	35	66	0	1
Niobe	56	98	abc	51	34	63	1	1
CDC Reserve	56	97	abc	48	32	63	2	1
CDC EXPLUS	53	93	bc	60	35	57	5	1
FB 205	50	88	c	50	42	83	3	1.3
CDC Thompson	49	85	c	47	36	46	1	1
CV%	**9.93**							
LSD (P=.05)	**10.0**							

*Check variety is AC Metcalfe

** Lodging scale: 1 is standing and 9 is flat

Table 3. 2-Row Barley Stony Plain

Variety	Yield bu/ac	Yield % Metcalfe	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
CDC EXPLUS	93	114	a	60	35	86	6	1
CDC Austenson	91	112	ab	50	39	94	1	1.7
Xena	91	112	ab	49	45	82	0	1.7
Merit 57	88	108	ab	48	37	86	0	3.3
Gadsby	88	108	ab	50	47	86	0	5.3
Cerveza	88	107	ab	47	38	78	1	1
TR 07728	87	106	abc	49	41	81	1	1
Major	86	105	a-d	47	32	86	1	1.3
AC Metcalfe	81	100	a-e	47	35	88	0	4.7
Ponoka	81	99	a-e	48	39	87	0	3
Norman	79	97	a-e	48	36	86	1	1.3
Champion	78	96	a-e	49	42	79	0	1.3
Niobe	75	93	a-f	49	34	94	1	2.3
CDC Reserve	75	92	a-f	48	32	89	0	2.3
CDC Meredith	74	91	a-f	46	38	85	0	3
CDC Kindersley	74	91	a-f	48	38	84	1	1.3
CDC Polarstar	74	91	a-f	48	38	87	1	5
Bentley	73	89	b-f	47	45	93	0	1.3
CDC Coalition	72	89	b-f	49	41	80	1	1
FB 205	68	84	c-f	49	51	111	0	4
Seebe	68	83	def	50	45	98	-1	3.3
HB 08304	67	82	def	60	39	92	2	1.3
CDC Carter	64	79	ef	58	35	91	2	2.3
CDC Thompson	58	71	f	45	37	65	2	1.7
CV%	**8.24**							
LSD (P=.05)	**6.4**							

*Check variety is AC Metcalfe

** Lodging scale: 1 is standing and 9 is flat

6-Row Barley- The world's most important crop for feeding livestock. As feed, it is nearly equal in nutritive value to corn, which is very high in energy. This leads it to be valuable in feedlots and as hog feed. Six-row barley allows for desirable portions of firm fat and lean meat.

Table 4. 6-Row Barley Dapp

Variety	Yield bu/ac	Yield % Metcalfe	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
Chigwell	77	106	a	47	38	73	-1	1
Vivar	74	101	a	46	37	66	-1	1
AC Metcalfe	73	100	a	50	40	67	0	1
CDC Anderson	70	96	a	47	33	73	-3	1
BT 584	69	95	a	46	38	62	-4	1
Celebration	68	93	a	49	37	71	-1	1
CDC Mayfair	68	93	a	47	33	67	-4	1
Stellar ND	64	88	a	47	39	73	-2	1
Sundre	61	84	a	50	39	73	1	1
CV%	**8.94**							
LSD (P=.05)	**10.7**							

*Check variety is AC Metcalfe

** Lodging scale: 1 is standing and 9 is flat

Table 5. 6-Row Barley Stony Plain

Variety	Yield bu/ac	Yield % Metcalfe	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
Chigwell	70	123	a	44	37	84	2	3
CDC Mayfair	64	114	a	46	38	92	1	1.7
Stellar ND	64	112	a	46	36	90	1	1.3
Vivar	62	109	a	44	39	87	2	1
Sundre	62	109	a	46	38	88	3	2
BT 584	59	105	a	45	33	90	0	1
CDC Anderson	58	102	a	47	39	92	1	2.7
AC Metcalfe	57	100	a	45	37	90	0	1
Celebration	52	92	a	45	35	89	2	1
CV%	**12.57**							
LSD (P=.05)	**13.2**							

*Check variety is AC Metcalfe

** Lodging scale: 1 is standing and 9 is flat

Hard Red Spring (HRS) Wheat – The Canadian Grain Commission currently classes 56 varieties under the Canadian Western Red Spring (CWRS) class. HRS is known for its hard texture, high protein and high gluten content. These attributes contribute to making superior bread making flour. The top two grades, No. 1 and No. 2, are segregated by protein level, with guaranteed minimum protein contents.

Table 6. HRS Wheat Neerlandia

Variety	Yield bu/ac	Yield % AC Barrie	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
Unity VB	61	116	a	62	39	97	-3	1
CDC Utmost	60	114	ab	60	41	89	-2	1
Carberry	58	111	ab	61	41	83	-1	1
Vesper VB	56	107	abc	59	44	98	-2	1
CDC Stanley	55	105	abc	61	39	94	-2	1
CDC GO	54	104	abc	59	43	80	-2	1
WR 859 CL	53	101	abc	60	37	82	0	1
AC Muchmore	53	100	abc	59	38	80	-1	1
AC Barrie	53	100	abc	61	42	98	0	1
AC Goodeve	52	99	abc	60	42	89	-4	1
Shaw VB	51	97	abc	61	40	102	-2	1
BW 433	50	96	abc	61	43	101	0	1
Intrepid	50	95	abc	59	44	95	-4	1
CDC Kernen	49	94	abc	61	42	98	-1	1
Stettler	49	93	abc	61	39	94	-1	1
Snowbird	48	92	abc	60	38	91	-1	1
Katepwa	45	87	abc	60	37	98	0	1
Glenn	45	86	abc	61	39	85	-2	1
CDC Thrive	44	84	bc	60	39	89	-1	1
BW 901	42	80	c	58	39	88	-2	1
5604 HR CL	42	79	c	60	36	90	-1	1
CV%	**10.15**							
LSD (P=.05)	**8.5**							

*Check variety is AC Barrie

** Lodging scale: 1 is standing and 9 is flat

Table 7. HRS Wheat Stony Plain

Variety	Yield bu/ac	Yield % AC Barrie	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
CDC Stanley	77	134	a	62	36	92	1	1
Vesper VB	66	116	b	63	40	91	1	1
Stettler	66	116	b	63	37	86	0	1
CDC GO	65	115	bc	61	39	79	0	1
Shaw VB	65	115	bc	63	37	99	1	1
CDC Utmost	65	113	bcd	61	38	86	-1	1
Unity VB	64	112	bcd	63	36	97	0	1
Carberry	62	109	b-e	62	36	76	3	1
Intrepid	62	109	b-e	62	42	100	-1	1
CDC Kernen	62	109	b-e	62	39	94	0	1
AC Goodeve	61	107	b-e	62	37	93	-1	1
Glenn	60	106	b-e	63	37	88	1	1
BW 433	60	105	b-e	62	38	96	0	1
CDC Thrive	58	102	b-e	60	36	93	0	1
Snowbird	57	100	b-e	62	35	94	0	1
AC Barrie	57	100	b-e	63	35	94	0	1
AC Muchmore	55	97	cde	60	34	77	2	1
WR 859 CL	55	96	de	62	36	85	1	1
5604 HR CL	55	96	de	61	32	92	0	1
BW 901	54	94	e	60	36	88	0	1
Katepwa	52	92	e	62	35	105	-2	1
CV%	**5.75**							
LSD (P=.05)	**5.8**							

*Check variety is AC Barrie

** Lodging scale: 1 is standing and 9 is flat

Utility Wheat – The Western Canadian wheat classes consist of eight individual descriptions. This trial consisted of two classes: Canadian Prairie Spring Red (CPSR) and Canadian Wheat Soft White Spring (CWSWS). CPSR has medium to hard kernels and medium to hard dough strength. It has two milling grades, and is used for hearth, flat, and steamed breads, and noodles. CWSWS is a soft white wheat with low protein. It has three milling grades used for cookies, cakes, and pastry. The trial this year also contains two General Purpose (GP) varieties, a Canadian Prairie Spring White (CPS-W) and a Canadian Western Extra Strong (CWES) variety.

Table 8. Utility Wheat Neerlandia

Variety	Yield bu/ac	Yield % AC Taber	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
AC Andrew	72	145	a	58	43	81	-1	1
NRG 010	66	133	ab	60	47	85	-1	1
CDC NRG 003	65	132	abc	60	52	85	-1	1
Minnedosa	62	126	abc	60	50	86	-1	1
HY 985	62	124	abc	60	52	81	-2	1
Conquer VB	61	123	abc	60	46	83	-2	1
AC Formost	56	114	bcd	59	44	76	-3	1
AC Crystal	53	107	cd	59	43	75	2	1
AC Taber	50	100	de	60	43	79	0	1
HW 024	42	84	e	59	37	95	1	1
CV%	**8.21**							
LSD (P=.05)	**8.3**							

*Check variety is AC Taber

** Lodging scale: 1 is standing and 9 is flat

Table 9. Utility Wheat Stony Plain

Variety	Yield bu/ac	Yield % AC Taber	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
AC Andrew	89	124	a	62	36	85	0	1
Conquer VB	87	122	a	62	42	94	-1	1
NRG 010	84	117	abc	62	40	91	-1	1
Minnedosa	75	104	abc	62	43	91	-1	1
HY 985	74	104	abc	62	46	88	-2	1
AC Taber	72	100	bcd	62	36	84	0	1
CDC NRG 003	70	98	bcd	62	46	86	-1	1
AC Foremost	70	98	bcd	61	35	83	-2	1
AC Crystal	66	92	c	62	36	87	-1	1
HW 024	54	76	d	59	32	94	-1	1
CV%	**8.36**							
LSD (P=.05)	**10.6**							

*Check variety is AC Taber

** Lodging scale: 1 is standing and 9 is flat

Oats – Oats are a valuable part of crop rotation. They provide disease and insect breaks for wheat, barley, and canola. Their rapid establishment and growth provide excellent weed suppression. Oats also work well as a "catch crop" for taking up and storing excess nitrogen, and the straw provides a nutrient source for the following year's crop. The straw also protects against soil erosion, and contributes to an increase in the soils organic matter content.

Table 10. Oats Dapp

Variety	Yield bu/ac	Yield % Dancer	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
AC Morgan	137	111	a	39	36	101	-1	1
CDC Minstrel	129	104	a	38	33	95	-1	1
CDC Big Brown	127	102	a	40	35	99	-2	1
CDC Dancer	124	100	a	40	31	101	0	1
OT 2069	121	97	a	40	31	96	-1	1
AC Bradley	118	95	a	40	32	98	0	1
CDC Seabiscuit	110	88	a	36	35	94	0	1
CV%	**9.54**							
LSD (P=.05)	**21.0**							

*Check variety is CDC Dancer

** Lodging scale: 1 is standing and 9 is flat

Table 11. Oats Stony Plain

Variety	Yield bu/ac	Yield % Dancer	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
AC Morgan	221	148	a	39	43	124	-1	1
CDC Seabiscuit	192	129	b	37	39	121	0	1
CDC Big Brown	179	120	bc	39	38	120	-1	1
OT 2069	171	114	bc	39	32	129	0	1
AC Bradley	164	110	bc	34	37	124	0	1
CDC Minstrel	161	108	bc	36	37	121	-1	1
CDC Dancer	149	100	c	39	35	122	0	1
CV%	**7.3**							
LSD (P=.05)	**23.0**							

*Check variety is CDC Dancer

** Lodging scale: 1 is standing and 9 is flat

Triticale – A hybrid of wheat and rye. Early breeding efforts concentrated on developing a high yielding, drought tolerant, human food crop species suitable for marginal wheat producing areas. More recent programs concentrate on developing improved animal feed and fodder varieties for production under diverse conditions.

Table 12. Triticale Dapp

Variety	Yield bu/ac	Yield % Pronghorn	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
T 200	75	107	a	59	43	92	-1	1
Pronghorn	70	100	a	57	44	107	0	1
AC Ultima	69	99	a	57	46	98	-1	1
T 204	64	92	a	57	50	98	-1	1
Bumper	64	92	a	58	47	97	0	1
Taza	64	92	a	57	49	101	-2	1
CV%	**8.23**							
LSD P=.05)	**10.2**							

*Check variety is Pronghorn

** Lodging scale: 1 is standing and 9 is flat

Table 13. Triticale Stony Plain

Variety	Yield bu/ac	Yield % Pronghorn	Significance	Test wt. lb/bu	Seed size g/1000	Height cm	Days to Maturity (+/- check)*	Lodging (1-9)**
T 200	111	101	a	56	47	105	1	1
Pronghorn	110	100	a	57	50	116	0	1
AC Ultima	106	96	ab	57	44	115	1	1
Taza	103	94	ab	57	48	112	1	1
Bumper	93	84	bc	58	46	110	2	1
T 204	88	79	c	53	44	109	2	1
CV%	**8.23**							
LSD (P=.05)	**10.2**							

*Check variety is Pronghorn

** Lodging scale: 1 is standing and 9 is flat

Flax – grown mainly in cool northern climates. High omega-3 fatty acid and fibre in flax are some of the health benefits. Used in livestock feeding, human consumption and many other industrial uses.

Table 14. Flax Dapp

Variety	Yield bu/ac	Yield % CDC Bethune	Significance	Test wt. lb/bu	Height cm	Lodging (1-9)**
FP 2270	6	165	a	57	55	1
Prairie Grande	6	162	a	51	61	1
FP 2214	5	138	bc	22	64	1
Prairie Thunder	4	107	c	26	63	1
CDC Bethune	4	100	c	61	59	1
CV%	**10.2**					
LSD (P=.05)	**0.7**					

*Check variety is CDC Dancer

** Lodging scale: 1 is standing and 9 is flat

Conclusions

The following were the highest yielding varieties of each crop tested:

2-Row Barley - CDC EXPLUS, Merit 57***, CDC Austenson***, Ponoka

6-Row Barley - Vivar***, Chigwell*, CDC Mayfair

HRS Wheat - Stettler*, Unity, CDC Stanley, Vesper VB

Utility Wheat - AC Andrew***, Conquer VB, NRG 010

Oats - AC Morgan***, CDC Seabiscuit, CDC Minstrel

Triticale - T 200, Pronghorn

Flax - FP2270, Prairie Grande

*Were among highest yielding varieties in 2010 annual report.
**Were among highest yielding varieties in 2009 annual report.
***Were among highest yielding varieties in 2009 and 2010 annual report.

2011 Heifer Pasture Summary

Heifer Pasture - SE-23-61-26 W4

Manager: Megan Foster, GRO Forage and Livestock Agronomist.

Fertilizer: Paddocks Y8, Y4 & R5 received fertilizer as described in the Heifer Pasture Fertilizer Trial 2011 (refer to table of contents)

Stocking Rate: 82 heifers (6 contributors)
112 total grazing days

Entry Date: June 8, 2011 (Average heifer weight 953 lbs.)

Exit Date: September 27, 2011
(Average heifer weight 1134 lbs., ADG 1.62 lbs./day)

Objectives:

1. To demonstrate a rotational grazing system and its effect on carrying capacity.
2. Provide a site for further research and producer learning activities.

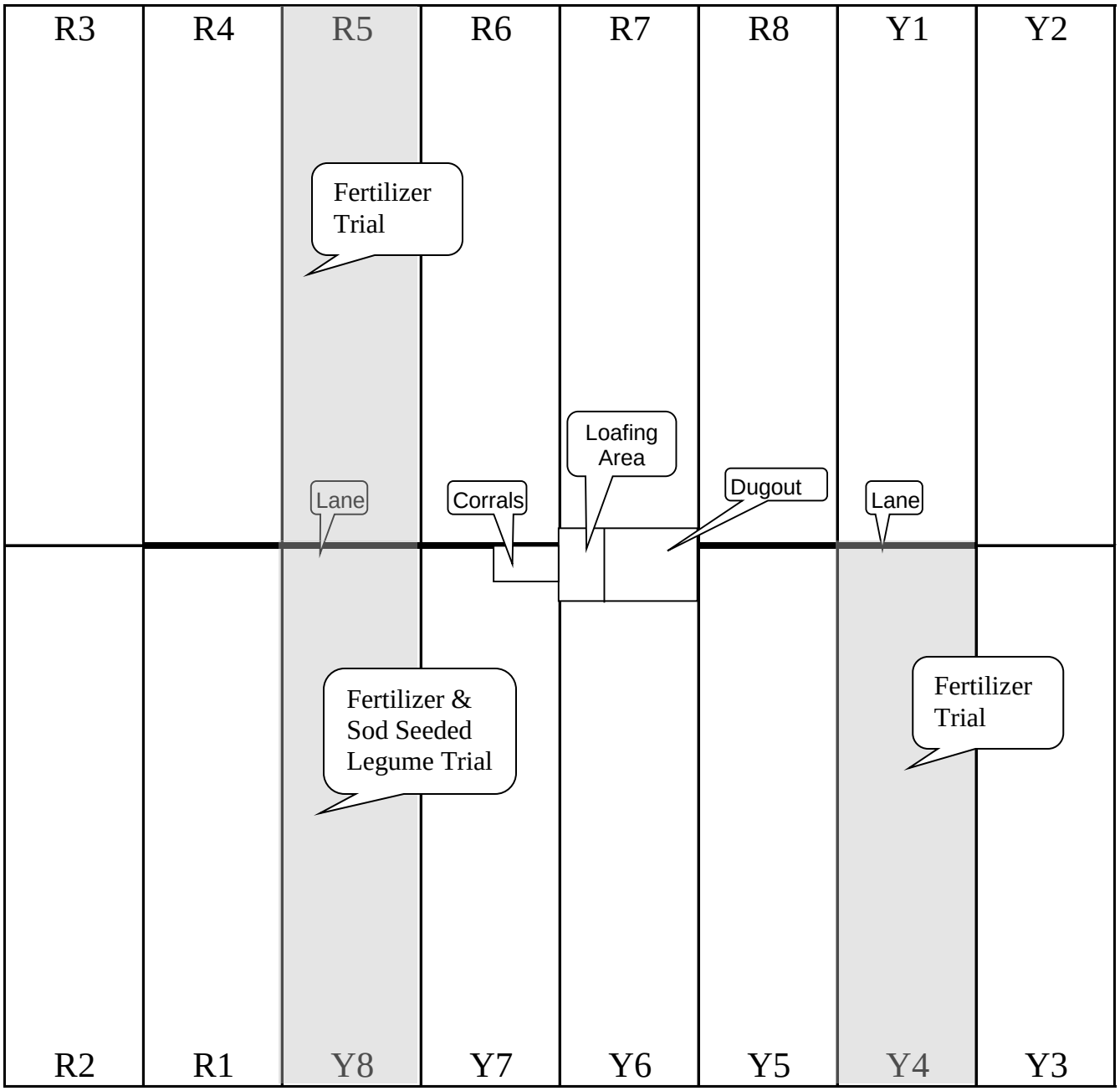
History & Field Design (see next page for map):

The pasture was established in 1978 and was originally used for steers. In 1988 the first heifers were put into the pasture, and have remained ever since. The 160-acre pasture is split into 16 paddocks; approximately 10 acres each. There is a central watering (loafing) area as well as a handling facility. The perimeter is fenced with 4 double strand barbed wire, and cross fencing is done with 2 single strand barbed wires that are powered with a solar electric fencer. Each paddock is rotationally grazed to allow alternate periods of grazing and rest. If managed properly, these rest periods allow the grass a chance to replenish nutrients after defoliation and therefore increase grass production. In a continuous grazing situation some forage resources are continually stressed (no rest); while others may be underutilized as the animals will repeatedly graze the most palatable species. In this situation the preferred species will begin to decline and less palatable species or weeds will begin to dominate the pasture.

Water:

In September 2002, the dugout and Dutch Industries windmill water system were replaced with a free flowing well delivering a rate of approximately 2 gal/min (cut back from 4 gal/min). A 580-gallon poly trough was installed with an over-flow pipe to prevent over filling, and spillage into the watering area.

GRO Heifer Pasture Map



Herd Health:

All heifers were weighed and inspected for overall health and soundness on entry day. The heifers were weighed again on exit day in October. Oilers containing a 2% Malathion solution (diesel fuel carrier), for fly control, were hung on the mineral feeders upon entry. Three heifers were treated for foot rot while on pasture and five was treated for pinkeye.

Breeding:

Two, 2 year old Red Angus bulls owned by Ross and Beau Lyons were used in the pasture, and entered heifer pasture at the same time as the heifers (June 8) and remained in the pasture until September 27th when the heifers were removed. The heifers were palpated for pregnancy upon exit it was determined that the overall open rate was 2.4% which extremely low.

Grazing:

Due to fact that the past few years have been exceptionally dry, both the stocking density and entry date were carefully evaluated and the decision was made to graze less heifers this year. The grass would still be under severe drought stress caused by the previous year for most of this growing season even if sufficient rainfall was experienced. 2011 actually saw a 35% reduction in precipitation compared to 2010. June was the only month where we experienced above average rainfall.

The order that the paddocks were grazed was determined by the quantity of growth on a visual basis. The paddocks with a high proportion of meadow foxtail were generally grazed first. Meadow foxtail grows vigorously in the spring and sets seed early. If allowed to set seed, the palatability decreases, and cattle are very hesitant to graze it. Grazing periods in all rotations were kept short (about 2-3 days) to ensure that new regrowth was not grazed. This also allowed all 16 paddocks to be grazed before they set seed, thereby preventing a decrease in seasonal yield, quality and palatability. Table 1 contains the number of grazing days supported by each paddock, as well as the rotation schedule.

Table 1: 2011 Paddock Rotation Schedule (Days)

Paddock #	1st Rotation	2nd Rotation	3rd Rotation	4th Rotation	Total Days Grazed
R1	2	3	2		7
R2	2	2	3		7
R3	2	2	2		6
R4	3	2	2		7
R5	2	2	3		7
R6	3	2	2		7
R7	2	3	3		8
R8	2	3			5
Y1	3	3	2		8
Y2	2	2	2		6
Y3	2	3	3		8
Y4	3	2	2	1	8
Y5	2	2	2		6
Y6	3	2	2		7
Y7	2	2	3		7
Y8	3	3	2		8
Rotation Length	**38**	**38**	**35**	**1**	**112**

Table 2: AUM for Replacement Heifers on Pasture

Year	# of Animals	Grazing Days	# AUM on 150 Acres	# AUM/Acre
1988-2004	133	121	331	2.22
2005	101	117	291	1.94
2006	98	127	307	2.05
2007	110	135	366	2.44
2008	78	133	256	1.71
2009	103	118	300	2.00
2010	94	126	292	1.95
2011	**82**	**112**	**226**	**1.51**
Average	**108**	**122**	**320**	**2.14**

AUM calculated as follows: (0.75AU x # heifers x # months)

Table 3: Summary of Production

Year	Entry Weight	Exit Weight	Gain (lbs.)	ADG (lbs.)	Gain/acre (lbs.)
1988-2004	922	1124	208	1.74	151
2005	891	1059	168	1.44	113
2006	907	1083	176	1.38	115
2007	873	1117	244	1.82	179
2008	843	1106	263	1.98	128
2009	869	1073	204	1.73	131
2010	913	1049	136	1.08	107
2011	**953**	**1134**	**181**	**1.62**	**127**
Average	**914**	**1113**	**204**	**1.69**	**144**

Table 4: Heifer Pasture Precipitation (inches)

Year	May	June	July	August	September	October	Total
1988-2004	1.11	2.67	3.21	2.24	0.78	0.36	9.17
2005	1.44	4.08	1.64	1.20	0.56	0.80	9.72
2006	4.50	3.12	1.36	2.28	1.76	0.12	13.14
2007	3.10	5.36	2.52	1.10	0.72	0.04	12.84
2008	3.60	2.04	3.60	1.40	0.96	0.00	11.60
2009	0.18	0.39	3.43	1.06	0.74	--	5.80
2010	1.54	1.69	1.64	2.06	1.00	0.10	8.01
2011	**0.03**	**3.32**	**0.48**	**0.98**	**0.41**	**0.02**	**5.24**
Average	**1.58**	**2.74**	**2.78**	**1.93**	**0.83**	**0.26**	**9.26**

Income and Costs:

Tables 5-8 illustrate the income derived from, as well as costs incurred by, the Heifer Pasture project. 1988 fees were based on gain only; however, this proved to be a problem as some heifers actually had negative gain and paid nothing, while others paid much more. In 1989 grazing fees were changed to $10/animal/month; gain at $.10/lb, and by 2002 had increased to $15/animal/month; gain at $.12/lb. In 2003 the animal gain charge was dropped, and grazing fees were based on a monthly charge of $20/animal/month. In 2005 grazing fees were changed to $0.65/head/day (approximately $20/animal/month) as it was deemed more accurate than a monthly charge.

Table 5: Contributor Cost Summary

Year	Animal Gain	Monthly Charge	Breeding Fee	Veterinary Costs	Average Cost /head/day
1988-2004	$22.20	$46.85	$13.80	$1.77	$0.68
2005	--	$76.05	$15.00	$4.05	$0.81
2006	--	$82.55	$15.00	$4.00	$0.80
2007	--	$87.10	$15.00	$4.00	$0.79
2008	--	$86.45	$0.00	$4.00	$0.68
2009	--	$76.70	$23.00	$4.00	$0.88
2010	--	$81.90	$23.00	$4.50	$0.87
2011	**--**	**$72.80**	**$23.00**	**$3.25**	$0.88
Average	**$22.20**	**$56.67**	**$14.52**	**$2.41**	**$0.72**

NOTE: Majority of veterinary cost is for pregnancy checking.

Table 6: Income Breakdown

Year	Animal Gain	Monthly	Breeding	Vet Charges	Total
1988-2004	$2,439.89	$5,056.12	$1,544.37	$183.61	$8,936.94
2005	--	$7,651.80	$1,500.00	$404.80	$9,556.60
2006	--	$8,089.90	$1,470.00	$392.00	$9,951.90
2007	--	$9,581.00	$1,290.00	$440.00	$11,311.00
2008	--	$6,743.10	$0.00*	$312.00	$7,055.10
2009	--	$7,900.10	$2,369.00	$412.00	$10,681.10
2010	--	$7,698.60	$2,162.00	$423.00	$10,283.60
2011	**--**	**$5,969.60**	**$1,886.00**	**$263.25**	**$8,118.85**
Average	**$2,308.95**	**$6,069.05**	**$1,544.85**	**$237.78**	**$9,120.25**

*Contributors were reimbursed for open heifers

Table 7: 5-Year Summary of Costs, 2005-2011

	2005	2006	2007	2008	2009	2010	2011
Operating Costs							
Rent	3500	3500	3500	3500	3500	3500	**3500**
Fertilizer	0	0	0	0	0	0	
Insecticide	16	0	0	0	0	0	
Ear Tags	0	0	0	0	0	0	**144**
Fly Control	16	0	0	0	0	0	
Veterinary	412	405	440	679	431	423	**265**
Breeding/Bull Insurance	750	750	1500	500	400	400	
Bull Rental							**1400**
Salt/Mineral	381	319	665	394	581	758	**325**
Labour	1480	1125	1363	1065	1155	1120	**1020**
Travel	1200	904	1271	1268	1463	1400	**840**
Misc/Other	202	0	110	534	525	350	**452**
Total Operating Costs	*7956*	*7002*	*8849*	*7940*	*8054*	*7951*	***7946***
Capital Costs							
Establishment	0	0	0	0	0	0	**0**
Capital Investment	321	0	0	0	0	0	**0**
Bulls	1800	2000	0	0	1500	1500	**0**
Total Capital Costs	*2121*	*2000*	*0*	*0*	*1500*	*1500*	*0*
Total Costs	**$10,077**	**$9,002**	**$8,849**	**$7,940**	**$9,554**	**$9,451**	**$7,946**

NOTES:

Capital Investment notes: A well was drilled in 2002; Water trough purchased in 2005; Bull was injured in 2005, and had to be purchased; Bull was injured in 2006, and had to be purchased.

** Bull insurance was purchased for two bulls for $400 each ($800 total) this is to be amortized over the two years the bulls will be used (2009-2010)*

*** Two bulls were purchased @ $4000 each, both will be sold at the end of 2010 for $2500, the remaining ($1500 each) will be amortized over the two years that they are to be used.*

Table 8: 2011 Heifer Pasture Gross Margin and Profit/Loss

Gross Revenue	
Monthly Grazing	$5,969.60
Breeding	$1,886.00
Veterinary	$266.50
Bull Salvage	$0.00
Total Revenue	*$8,122.10*
Direct Costs	
Salt/Mineral	$324.75
Vet Charges	$265.12
Bull/ Bull Insurance	$1,400.00
Other	$596.00
Total Direct Costs	*$2,585.87*
Gross Margin (GR – DC)	$5,536.23
Gross Margin/Acre	$36.91
Overheads	
Capital	$0.00
Labour/Travel	$1,860.00
Lease	$3,500.00
Total Overheads	*$5,360.00*
Profit / Loss (GM – TO)	$176.23

Discussion:

Even though 2010 was a good year for precipitation amounts; the previous years as well as 2011 have fallen short, and because of that, pastures are still recovering and are not yet up to full production potential. Managing the heifer pasture for a complete grazing season has allowed me to clearly assess the quality and potential of the stand. It have been more than 30 years since the stand was established, which more than classifies it as an old pasture and this year we have begun conducting various trials to improve pasture quality at the heifer pasture.

Carrying capacity in terms of number of animals and AUM's were under the 24-year average. According to a table from Alberta Agriculture's website [1], a recommended stocking rate for tame forages in good condition in an annual precipitation zone of 14-18 inches with an average fertilizer program is 1.40 AUMs/acre (85 yearlings for 112 days). This document classifies yearlings as 0.67 AU, therefore GRO's 2011 stocking rate was 1.36 AUM/acre (different than Table 2, based on 0.75 AU). Alberta Agriculture bases their recommended stocking rates on a continuous-grazing situation; this demonstrates the ability of a rotational grazing situation to increase forage production per acre.

The average daily gain of 1.62 lbs. was slightly below the average of 1.69 lbs. This is an ideal ADG for replacement heifers on pasture. On average the heifers gained 127 lbs. per acre which is below average for the pasture (Table 3). These numbers are reflective of a good grazing program and only seem lower because the average size of heifers that have been entering the pasture in the past few years has been increasing and therefore they are unable to gain as much on pasture as a lighter heifer would.

Tables 5-8 summarize the historical expenses and income of the heifer pasture as well as in the current year. The pasture did make money this year ($176.23) however significantly lower than previous years. This is due to the fact that stocking rates have been reduced in the past two years to alleviate some stress on the grass. This has been a conscious decision by GRO and we hope it will help the long term sustainability of the pasture.

Sources:

1. Alberta Agriculture, Food and Rural Development.
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex113

Barley Silage

Kevin & Brian Ratke SW-36-51-1 W5 (Stony Plain)
Glen Pidsadowski SW-29-61-25 W4 (Dapp)

Objectives:

1. Compare silage yield and nutritional value of new and commonly used barley varieties.
2. Summarize historical silage data.

Background:

A randomized complete block with 3 replicates of each treatment was used. Plot size was 1.37 metres wide (6 rows with 9 inch spacing) by 6 metres long. Barley was harvested in the soft dough stage. Samples were weighed and sent for wet chemistry analysis to obtain moisture and feed quality.

Table 1: Plot Information

Action	Dapp	Stony Plain
Seeding	May 18, 2011	May 19, 2011
Seeding Specifics	Depth: 1 inch Row Spacing: 9 inches Seeding Rates: See Table 2	Depth: 1 inch Row Spacing: 9 inches Seeding Rates: See Table 2
Plot Activities	**1.** Heavy harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA. **3.** Frontline XL & Axial sprayed in-crop.	**1.** Cultivated and harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA. **3.** Frontline XL & Axial sprayed in-crop.
Equipment	Fabro Zero-till Drill with Atom Jet Openers	Fabro Zero-till Drill with Atom Jet Openers
Fertilizer (actual)	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S
Harvest	August 9, 2011	August 11, 2011

Barley Varieties used In the Trial:

Barley

CDC Cowboy: A rough-awned, two-row forage barley that does very well with less management, is resistant to stem rust, covered and false loose smuts and moderately resistant to net blotch. A tall growing plant, it is said to produce high amounts of biomass, but is susceptible to lodging, spot blotch, loose smut and scald.

AC Lacombe: A smooth-awned six-row barley with good lodging resistance. Resistant to the surface-borne smuts. Intermediate resistance to scald and net blotch. Susceptible to common root rot, speckled leaf blotch, and loose smut. Adapted to the black and grey wooded soils of Alberta.

Ponoka: A rough-awned two-row feed barley with excellent disease resistance; silage yields as high as or higher than AC Lacombe. Could replace Seebe in some areas. Resistant to loose smut & surface-borne smuts. Intermediate resistance to net blotch, common root rot, spot blotch, and scald.

AC Ranger: A smooth-awned six-row forage barley with good lodging resistance and grain yield. Intermediate resistance to net blotch and resistance to non-QCC stem rust. It is susceptible to scald, septoria, and QCC races of stem rust.

Seebe: A rough-awned two-row feed barley that is noted for its outstanding forage yields and has very good straw strength. Adapted to the high scald areas of Alberta, with scald resistance superior to all registered 2-row varieties. Also resistant to the surface-borne smuts. Susceptible to loose smut, common root rot, and net blotch.

Sundre: A smooth-awned six-row barley. High silage yield. Sundre has multiple gene resistance to scald, and has resistance to covered smut and false loose smut. Intermediate resistance for net blotch (spot form), spot blotch and stem rust. Susceptible to septoria, loose smut, net blotch (net form), and common root rot.

Trochu: A smooth-awned six-row barley with moderate disease resistance for scald but different strains than AC Lacombe; provides a rotation opportunity. The high % plump kernels facilitate even processing for cattle feed resulting in increased feed efficiency. Lodging resistance is similar to AC Lacombe. Resistant to the surface-borne smuts and common root rot. Intermediate resistance to scald and net blotch. Susceptible to loose smut.

Vivar: A rough-awned six-row semi-dwarf feed barley that has high grain yields. Intermediate reaction in the field to scald and net blotch.

Xena: A rough-awned two-row that has good lodging resistance with a high percentage of plump kernels. Xena has resistance to common root rot, intermediate resistance to surface-borne smuts and is susceptible to loose smut, scald and net blotch.

Chigwell: A smooth-awned hulled, six-row feed barley that is a good multi-use feed barley. Silage yield similar to Vivar and AC Lacombe. Medium Height, good lodging resistance. Resistant to surface-borne smuts, moderately resistant to scald, spot-blotch and spot-form net blotch. Moderately susceptible to loose smut and susceptible to common root rot, fusarium head blight, septoria and leaf blotch.

CDC Austenson: A two-row rough awned hulled feed barley with very high grain yield and short, strong straw. Large plump kernels. A top yielding two-row with improved performance over Xena. Resistant to stem rust and covered and false loose smut. Medium maturity. Susceptible to scald and true loose smut.

Busby: Newer two-row, rough awned feed barley. Excellent disease resistance, good grain yields and feed quality make it a good feed barley choice for the scald areas of Western Canada.

Seeding Rates:

Seeding rates (Table 2) were based on 1000-kernel weight and germination in order to achieve 24 plants per square foot for barley. It is very important to calculate seeding rates using this method (using germination % and 1000-kernel weight) to prevent under or over seeding. Crops with larger seed size have fewer seeds per pound/bushel. They need to have more pounds/bushels seeded per acre to keep viable seed counts the same as crops with small seed size.

Table 2: Seeding Rates

Treatment/Variety	Seeding Rate (lbs/ac)
Barley	
Cowboy	155
Lacombe	127
Ponoka	108
Ranger	113
Seebe	141
Sundre	105
Trochu	114
Vivar	112
Xena	87
Chigwell	104
CDC Austenson	117
Busby	165

Results:

Table 3: Dapp Silage Yields & Nutritional Analysis

Barley Variety	Yield @ 65% moisture (tons/ac)	Statistical Analysis (LSD)	CP (%)	TDN (%)
Vivar	5.4	a	7.1	71.5
Sundre	5.2	a	7.5	64.6
Cowboy	5.2	a	8.4	69.4
Ranger	5.1	a	7.9	70.8
Ponoka	5.1	a	8.2	67.7
Seebe	4.9	a	7.8	71.3
Trochu	4.4	a	7.5	69.1
Xena	4.4	a	7.1	70.0
CDC Austenson	4.3	a	7.8	71.0
Busby	4.3	a	7.1	70.5
AC Lacombe	4.1	a	8.1	69.0
Chigwell	4.0	a	7.2	69.0

Standard Deviation = 0.9 ton/ac, LSD = 1.56, CV = 18.97%

Table 4: Stony Plain Silage Yields & Nutritional Analysis

Barley Variety	Yield @ 65% moisture (tons/ac)	Statistical Analysis (LSD)	CP (%)	TDN (%)
AC Lacombe	8.8	a	9.7	70.4
Seebe	8.7	a	10.6	63.7
Ponoka	8.6	a	9.5	69.3
Busby	8.5	a	10.1	70.0
Xena	8.1	a	10.7	69.6
Vivar	8.0	a	11.1	68.6
Sundre	8.0	a	11.4	65.4
Cowboy	7.9	a	9.7	63.5
Chigwell	7.7	a	10.9	70.0
Trochu	7.6	a	10.9	68.5
CDC Austenson	7.5	a	11.2	68.2
Ranger	7.3	a	10.8	69.1

Standard Deviation = 0.76 ton/ac, LSD = 1.29, CV = 9.43%

Average Yields & Index from 2 Locations:

I have taken the yield and indexes of the two sites and averaged them in the table below. The table is sorted by index not yield. The index tells you where varieties ranked for tonnage versus the others at each site with 100 being average.

In some cases there may be a variety with a lower average tonnage listed above one with higher tonnage. This is because some sites produced higher total yields than others and because of this the average tonnage is not a true picture of production over the two sites.

Table 5: Average Yields & Index from 2 locations

Barley Variety	Yield @ 65% moisture (tons/ac)	Average Index
Ponoka	6.9	107
Vivar	6.7	107
Seebe	6.8	106
Sundre	6.6	105
Cowboy	6.6	104
Ranger	6.2	99
Busby	6.4	98
Lacombe	6.5	98
Xena	6.3	97
Trochu	6.0	94
CDC Austenson	5.9	92
Chigwell	5.9	90

Summary of Average Yields & Indexing for 2006-2011:

In order to get a better indication of production, I have summarized yield results from 14 sites over six years in Table 6 below. Chigwell and CDC Austenson were grown for the first time in 2010 and subsequently, are not included in the table.

Table 6: Summary of Average Yield & Index for 2006-2011 (14 trials)

Barley Variety	Yield @ 65% moisture (tons/ac)	Average Index
Sundre	9.6	107
Busby	7.0	107
Seebe	9.6	106
Cowboy	9.4	104
Ponoka	9.4	102
Vivar	9.2	101
Xena	8.1	101
AC Lacombe	9.1	100
Trochu	8.8	97
Ranger	8.3	90

Discussion:

Yields in 2011 generally followed past trends, however the crop stress the precipitation pattern caused at Dapp resulted in a higher coefficient of variance (CV) within the trial. A high CV results from a large amount of variability within a trial due to such conditions as moisture, temperature, and seedling vigour among others. Data which has a high CV (usually over 15 is considered high) means that the data is not statistically relevant and should not be used to make production decisions regarding which varieties yielded the highest in that trial. I would suggest that producers looking to select a silage variety refer to the Stony Plain results (table 4) or the historical yields (table 6).

At the both sites there were not any statistically significant differences in yield between the varieties. This means there was not enough of a difference in yield between, for example, the highest yielding and the lowest yield variety to consider one more desirable than the other; however, we can still look for trends and examine the historical data.

The Dapp site was very dry for the first few weeks of the growing season and then became very wet and saturated with continuous showers for the remainder of the development period. This caused a constant stress on the plants and signs of this stress became evident with reduced yields and disease emergence.

AC Lacombe and Ponoka both performed better than historical data would have predicted this year at Stony Plain. My assumption is they are just reflecting the more ideal growing conditions and precipitation patterns that we experienced this year and a significant portion of our historical data is comprised of drought years. We may see a trend of the varieties starting to **not** follow the historical trends but creating more accurate historical data from this point forward.

There was not any lodging at our sites this year; however, Sundre has shown susceptibility to lodging in past trials. CDC Cowboy and Ponoka have also shown lodging, but to a lesser degree.

The barleys at Dapp tended to have lower crude protein values than those at Stony Plain, this can be attributed to the plant stress that the Dapp barleys underwent throughout the growing season with respect to moisture.

There has been little difference in nutritional value among the barleys tested. As a general rule, nutritional value can be increased more easily by adjusting harvest time or fertilizer rates than through variety selection. Average protein was 9.1% and TDN 68.7%. The protein value is slightly lower than normal due to the lower feed quality at Dapp.

Oat Silage

Kevin & Brian Ratke SW-36-51-1 W5 (Stony Plain)
Glen Pidsadowski SW-29-61-25 W4 (Dapp)

Objectives:

1. Compare silage yield and nutritional value of new and commonly used oat varieties.
2. Summarize historical silage data.

Background:

A randomized complete block with 3 replicates of each treatment was used. Treatment size was 1.37 metres wide (6 rows with 9 inch spacing) by 6 metres long. The oats were harvested in the late milk stage. Samples were weighed and sent for wet chemistry analysis to obtain moisture and feed quality.

Table 1: Plot Information

Action	Dapp	Stony Plain
Seeding	May 18, 2011	May 19, 2011
Seeding Specifics	Depth: 1 inch Row Spacing: 9 inches Seeding Rates: See Table 2	Depth: 1 inch Row Spacing: 9 inches Seeding Rates: See Table 2
Plot Activities	**1.** Heavy harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA. **3.** Frontline XL sprayed in-crop.	**1.** Cultivated and harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA. **3.** Frontline XL sprayed in-crop.
Equipment	Fabro Zero-till Drill with Atom Jet Openers	Fabro Zero-till Drill with Atom Jet Openers
Fertilizer (actual)	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S
Harvest	August 9, 2011	August 11, 2011

Varieties used In the Trial:

CDC Baler: A forage oat with very long wide leaves, slightly taller than the standard forage variety, excellent lodging resistance and exceptional forage yield. It generally has higher energy and protein values than other forage oats.

Everleaf 126: The broad leaves offer improved leaf to stem ratios over the traditional class of forage oats. They are best suited to the higher rainfall areas in North America where they are capable of matching higher quality with higher tonnage. They were the latest heading, and shortest stemmed of the varieties tested. The seed kernel is different from any other tame oat variety that I have seen. It was dark like a wild oat (but without awns), and plump like a tame oat.

Foothills: High yielding forage oat with a finer stem than most other varieties, leading to higher nutritional value and more usage by livestock. Highest forage yield occurs in the west-central foothills of Alberta. Susceptible to rust and smut and has poor lodging resistance.

AC Morgan: A milling oat. Susceptible to crown and stem rust, moderately susceptible to smuts. Adapted to black and grey wooded soil zones of Alberta.

Murphy: A forage oat bred specifically for use for silage/greenfeed production. A taller variety than others tested (other than Foothills).

AC Mustang: A feed oat with good lodging resistance. High hull percent content - not a milling oat. Susceptible to crown and stem rust. Adapted to the Black and Gray soil zones of Alberta and Saskatchewan.

Waldern: A feed oat with good lodging resistance. High percent hull, relatively late maturity, susceptible to rust and smut, low test weight.

Jordan: A new feed, milling, and forage oat with a high silage yield, high grain yield and larger seed size. Superior lodging resistance.

CDC SO-1 ***NEW*** Designed for ruminant feeding programs. Low lignin hull with high oil groat (better digestibility).

Seeding Rates:

Seeding rates (Table 2) were based on 1000-kernel weight and germination in order to achieve 24 plants per square foot. It is very important to calculate seeding rates using this method (using germination % and 1000-kernel weight) to prevent under or over seeding. Crops with larger seed size have fewer seeds per pound/bushel. They need to have more pounds/bushels seeded per acre to keep viable seed counts the same than crops with smaller seed size.

Table 2: Seeding Rates

Oat Variety	Seeding Rate (lbs/ac)
Baler	99
Everleaf	102
Foothills	80
Jordan	124
Morgan	114
Murphy	102
Mustang	77
Waldern	137
CDC SO-1	141

Results:

Table 3: Dapp Silage Yields & Nutritional Analysis

Oat Variety	Yield @ 65% moisture (tons/ac)	Statistical Analysis (LSD)	CP (%)	TDN (%)
Waldern	8.8	a	7.9	63.0
Jordan	7.6	ab	8.6	63.0
Baler	7.3	ab	7.1	63.0
CDC SO-1	7.1	b	7.1	64.9
Murphy	7.0	b	7.0	58.4
Morgan	6.9	b	8.5	64.8
Mustang	6.4	b	8.6	62.6
Foothills	6.3	b	7.8	61.0
Everleaf	5.7	b	7.8	60.1

Standard Deviation = 0.73 ton/ac, LSD = 1.27, CV = 10.36%

Table 4: Stony Plain Silage Yields & Nutritional Analysis

Oat Variety	Yield @ 65% moisture (tons/ac)	Statistical Analysis (LSD)	CP (%)	TDN (%)
CDC SO-1	11.1	a	9.7	62.6
Baler	11.1	a	10.3	61.0
Waldern	10.9	a	11.3	61.5
Everleaf	10.8	a	12.3	59.5
Mustang	10.7	a	11.5	61.3
Morgan	9.6	a	13.3	62.9
Murphy	9.4	a	11.6	59.4
Jordan	9.2	a	12.6	61.9
Foothills	9.1	a	11.2	59.8

Standard Deviation = 1.1ton/ac, LSD = 1.94, CV = 10.77%

Average Yields & Index from 2 Locations:

I have taken the yield and indexes of the two sites and averaged them in the table below. The table is sorted by index not yield. The index tells you where varieties ranked for tonnage versus the others at each site with 100 being average.

In some cases there may be a variety with a lower average tonnage listed above one with higher tonnage. This is because some sites produced higher total yields than others and because of this the average tonnage is not a true picture of production over the two sites.

Table 5: Average Yields & Index from 2 locations

Oat Variety	Yield @ 65% moisture (tons/ac)	Average Index
Waldern	9.9	116
Baler	9.2	106
CDC SO-1	9.1	105
Jordan	8.4	99
Mustang	8.6	98
Morgan	8.3	96
Murphy	8.2	96
Everleaf	8.3	94
Foothills	7.7	89

Summary of Average Yields & Indexing for 2006-2011:

In order to get a better indication of production, I have summarized yield results from 2006 to 2011 below. This table summarizes data from 14 sites over the six years. CDC SO-1 was grown for the first time in 2011 and therefore was excluded from this table; however it should be noted that it indexed very high this year.

Table 6: Summary of Average Yield & Index for 2006-2011 (14 trials)

Oat Variety	Yield @ 65% moisture (tons/ac)	Average Index
Jordan	8.8	105
Waldern	10.1	104
Murphy	10.0	104
Mustang	9.8	101
Baler	9.7	97
Morgan	9.6	97
Everleaf	9.6	93

Discussion:

Waldern was the only stand-alone variety at Dapp, meaning there was enough of a statistical difference between Waldern and the rest that we can say it yielded statically significantly more than the other varieties. Jordan, Baler and the new CDC SO-1 also yielded well at this site while Everleaf 126 yielded very poorly at the Dapp site. This is probably due to the poor conditions seen in 2011 at this site. Everleaf 126 is an extremely broad leafed forage oat that is later maturing and shorter stemmed, they tend to preform best with higher amounts of rainfall, which explains the yields at Dapp.

There were no statistically significant differences at the Stony Plain site although CDC SO-1 and Baler ranked at the top. This show promising results for CDC SO-1 and its potential to perform well both in the field as well as in the feedlot. CDC SO-1 is a new oat that was developed specially for ruminant diets. It low lignin hull and high oil groat content make it easier to digest and ideal for cattle rations.

Historically over the six years in 14 trials Jordan, Waldern and Murphy yielded the highest; this was reflected somewhat at the Dapp site but this trend was not seen at the Stony Plain site.

The oats at the Dapp site tended to have lower protein and TDN values than the oats at Stony Plain; this would be caused by the precipitation stress imposed on the plants at Dapp. One caution is the higher levels of potassium (K) in oat silage. Many of the varieties had levels in excess of 2%, in particular Everleaf 126. At these levels cattle would be in danger of developing tetany, especially with the low levels of calcium and magnesium and special considerations must be taken when formulating rations.

Triticale Silage

Kevin & Brian Ratke SW-36-51-1 W5 (Stony Plain)
Glen Pidsadowski SW-29-61-25 W4 (Dapp)

Objectives:

1. Compare silage yield and nutritional value of new and commonly used triticale varieties.
2. Summarize historical silage data.

Background:

A randomized complete block with 3 replicates of each treatment was used. Treatment size was 1.37 metres wide (6 rows with 9 inch spacing) by 6 metres long. The triticale was harvested at the late milk stage/early dough. Samples were weighed and sent for wet chemistry analysis to obtain moisture and feed quality.

Table 1: Plot Information

Action	Dapp	Stony Plain
Seeding	May 18, 2011	May 19, 2011
Seeding Specifics	Depth: 1 inch Row Spacing: 9 inches Seeding Rates: See Table 2	Depth: 1 inch Row Spacing: 9 inches Seeding Rates: See Table 2
Plot Activities	**1.** Heavy harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA. **3.** Frontline XL and Axial sprayed in-crop.	**1.** Cultivated and harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA. **3.** Frontline XL and Axial sprayed in-crop.
Equipment	Fabro Zero-till Drill with Atom Jet Openers	Fabro Zero-till Drill with Atom Jet Openers
Fertilizer (actual)	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S
Harvest	August 9, 2011	August 11, 2011

Varieties used In the Trial:

Bunker: A reduced awn spring triticale that is earlier maturing than Pronghorn or Ultima, and has good disease resistance.

Taza: New spring variety

Pronghorn: A spring triticale that is susceptible to some races of stem rust.

Tyndal: A reduced awn spring triticale designed for conserved forage production (silage/greenfeed). Good leaf and stem rust resistance. An earlier maturing variety with good lodging resistance and high forage yields.

AC Ultima: A spring triticale with good disease resistance.

Seeding Rates:

Seeding rates (Table 2) were based on 1000-kernel weight and germination in order to achieve 24 plants per square foot. It is very important to calculate seeding rates using this method (using germination % and 1000-kernel weight) to prevent under or over seeding. Crops with larger seed size have fewer seeds per pound/bushel. They need to have more pounds/bushel seeded per acre to keep viable seed counts the same as crops with smaller seed size.

Table 2: Seeding Rates

Triticale Variety	Seeding Rate (lbs/ac)
Bunker	116
Taza	201
Pronghorn	124
Tyndal	98
AC Ultima	119

Results:

Table 3: Dapp Silage Yields & Nutritional Analysis

Triticale Variety	Yield @ 65% moisture (tons/ac)	Statistical Analysis (LSD)	CP (%)	TDN (%)
AC Ultima	6.1	a	10.6	68.3
Tyndal	5.5	ab	10.1	65.1
Bunker	5.5	ab	8.9	63.7
Pronghorn	5.1	b	8.3	64.8
Taza	4.7	b	8.7	64.6

Standard Deviation = 0.3 ton/ac, LSD = 0.64, CV = 5.64%

Table 4: Stony Plain Silage Yields & Nutritional Analysis

Triticale Variety	Yield @ 65% moisture (tons/ac)	Statistical Analysis (LSD)	CP (%)	TDN (%)
Pronghorn	8.4	a	11.9	61.5
Bunker	8.1	ab	11.6	62.6
Tyndal	7.7	ab	13.2	62.6
AC Ultima	7.7	ab	11.9	62.7
Taza	6.5	b	12.3	60.5

Standard Deviation = 0.58 ton/ac, LSD = 1.16, CV = 7.58%

Average Yields & Index from 2 Locations:

I have taken the yield and indexes of the two sites and averaged them in the table below. The table is sorted by index not yield. The index tells you where varieties ranked for tonnage versus the others at each site with 100 being average.

In some cases there may be a variety with a lower average tonnage listed above one with higher tonnage. This is because some sites produced higher total yields than others and because of this the average tonnage is not a true picture of production over the two sites.

Table 5: Average Yields & Index from 2 locations

Triticale Variety	Yield @ 65% moisture (tons/ac)	Average Index
AC Ultima	6.9	107
Bunker	6.8	104
Pronghorn	6.8	102
Tyndal	6.6	101
Taza	5.6	86

Summary of Average Yields & Indexing for 2009-2011:

In order to get a better indication of production, I have summarized yield results from 2009 to 2011 below. This table summarizes data from six sites over the three years.

Table 6: Summary of Average Yield & Index for 2009-2011 (6 trials)

Oat Variety	Yield @ 65% moisture (tons/ac)	Average Index
Pronghorn	8.3	104
AC Ultima	8.2	102
Tyndal	8.0	100
Bunker	8.0	98
Taza	8.1	94

Discussion:

AC Ultima and Pronghorn triticale has consistently been one of the top yielding varieties on the market; this was reflected this year at the Dapp site with AC Ultima being the highest yielding variety and at the Stony Plain site with Pronghorn yielding the highest.

Taza yielded the lowest at both sites this year and also has historically yielded the lowest in our trials.

Protein levels at the Dapp site were lower than the Stony Plain site due to an increase in plant stress at this site.

Calcium levels in the triticale silage are typically lower than most cereal silages and are usually very close to the phosphorus levels. This causes an imbalance in the proper calcium to phosphorus ratio which can lead to milk fever or tetany problems in cattle. For more on nutritional analysis of silage see Appendix 1.

Triticale also has a wider window for harvest than barley, and is later maturing than barley, allowing for a less hectic silage season. On the down side, it is harder chopping, extremely hard on harvester knives and can be less palatable than barley silage.

Corn Silage

Glen Pidsadowski SW-29-61-25 W4 (Dapp)

Objectives:

1. Compare silage production and nutritional value of corn varieties.
2. Compare cost of growing corn for silage versus more traditional crops.
3. Summarize historical silage data.

Background:

A strip plot design was used for this trial. Samples were weighed and sent for wet chemistry analysis to obtain moisture and feed quality.

Table 1: Plot Information

Action	Tawatinaw
Seeding	May 18, 2011
Seeding Specifics	Depth: 1.5 inches Row Spacing: 8 inches Seeding Rates: See Table 2
Plot Activities	**1.** Heavy harrowed prior to seeding. **2.** Pre-emergent and in crop Roundup sprayed
Equipment	6 Row Corn Planter
Fertilizer (actual)	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S
Harvest	September 9 ,2011

Seeding Rates:

Seeding rates were based on recommendations for this area and were consistent among varieties → 32,000 seeds/acre

Varieties used In the Trial:

Pioneer RR 39M26: Roundup Ready, needs 2100 CHU's for grain production and 2050 CHU for silage.

Pioneer RR 7213: Roundup Ready, needs 2050 CHU's for grain production. Early maturing, good root strength

Pioneer RR 39F44: Roundup Ready, needs 2000 CHU's for grain production. Very early maturing

Pioneer RR 39D95: Roundup Ready, needs 2175 CHU's for grain production

Table 2: Dapp Silage Yields & Nutritional Analysis

Corn Variety	Yield @ 65% moisture (tons/ac)	CP (%)	TDN (%)
39D95	22.5	8.0	66.7
39M36	17.1	10.1	66.4
39F44	14.7	13.3	68.8
P7213	12.4	9.3	67.1

Discussion:

Corn has had the highest yields in our trials every year with the exception of 2008 (2008 produced the lowest yield that we have seen to date mostly due to lack of moisture and a cooler than normal July). This year the same trend was seen with corn out-yielding all the cereal and pulse varieties The corn once again has shown that in an ideal growing season, corn will significantly out-yield cereal varieties but even in a poor growing season it will yield similar or slightly better than the cereal silages making it a good choice for producers in all climates even if the ability to reach the required CHU's is variable year to year.

It is important to note that the two corn varieties that were the latest maturing varieties (or need the most CHU's to mature) yielded the highest in our trials.

Pioneer 39F44 which is the earliest maturing variety had the highest CP% and TDN% which is what we expected to see since it would have the most mature cobs, therefore more energy and protein development.

Energy levels in 2011 averaged 67.3% which is adequate for a beef cow right through calving. Crude protein levels in corn silage are usually expected to be around 8 or 9%. This year protein averaged 10.2% with a high of 13.3%, this is well above expected and will meet a beef cow's protein and energy requirement into the third trimester and even after calving with no additional supplementation needed.

There are advantages to using corn for forage, such as the higher energy content (when it has mature cobs) and its ability to stand through the snow for grazing. However it can also have limitations. In some years it can require protein supplementation for third trimester pregnant and lactating cows (this was **not** the case in 2011). Protein level of the forage can be increased by adding more nitrogen fertilizer (not very cost effective), and is also a function of yield (high yield usually means lower protein). The high energy content from mature cobs can also be a problem if cattle are not control grazed. There were some instances in 2006 of mature cows dying from acidosis (grain overload), however all of these issues can be addressed by having your rations balanced by a qualified nutritionist.

Economic Analysis:

We have grown corn in our plots from 2005-2011. Often corn will have higher input costs than cereal crops and therefore many producers are hesitant to explore corn's potential in a forage system. As you can see in table 3, despite corn's higher input costs it is still cheaper to grow on a cost/ton basis than cereal crops due to the high yield potential of corn. If producers are willing to spend more to make more, then corn just might be a good fit.

Table 3: Economic Analysis of Growing Corn versus Top Yielding Cereal Varieties of 2011

VARIETY	LAND	SEED	SEEDING*	FERT	TOTAL	YIELD	COST/TON
Pickseed – 39D95 RR	$50.00	$77.09	$34.50	$94.57	$256.16	22.5	$11.38
Pioneer – 7213 RR	$50.00	$70.69	$34.50	$94.57	$249.76	12.4	$20.14
Pioneer – 39F44 RR	$50.00	$70.37	$34.50	$94.57	$249.44	14.7	$16.97
Pioneer – 39M26 RR	$50.00	$69.09	$34.50	$94.57	$248.16	17.1	$14.51
Ponoka Barley	$50.00	$17.49	$21.00	$94.57	$183.06	6.9	$26.53
Vivar Barley	$50.00	$18.04	$21.00	$94.57	$183.61	6.7	$27.40
Waldern Oats	$50.00	$28.55	$21.00	$94.57	$194.12	9.9	$19.61
Baler Oats	$50.00	$21.87	$21.00	$94.57	$187.44	9.2	$20.37
AC Ultima Triticale	$50.00	$21.18	$21.00	$94.57	$186.75	6.9	$27.07

Custom Seeding Rates: Cultivation $10/acre, Harrow $4.50/acre, Conventional Seeding $20/acre Total $34.50/acre; No-Till $21/acre.

Corn Prices use conventional seeding rate, cereals use no till pricing

Pulse Silage

Glen Pidsadowski SW-29-61-25 W4 (Dapp)
Kevin & Brian Ratke SW-36-51-1 W5 (Stony Plain)

Objectives:

1. Compare silage production of pulses and their mixtures.
2. Compare costs of using pulse crops to provide nitrogen to cereals versus growing cereals as a mono-crop and using nitrogen fertilizer

Background:

A randomized complete block with 3 replicates of each treatment was used. Treatment size was 1.37 metres wide (6 rows with 9 inch spacing) by 6 metres long. The barley was harvested in the mid/late dough stage, and the oats were harvested in the late milk stage. Triticale was harvested in the late milk stage. Mono-cropped cereals were harvested the same day as their respective mixtures. Samples were weighed and sent for wet chemistry analysis to obtain moisture and feed quality.

Table 1: Plot Information

Action	Dapp	Stony Plain
Seeding	May 18, 2011	May 20, 2011
Seeding Specifics	Depth: 1.5 inches Row Spacing: 9 inches Seeding Rates: See Table 2	Depth: 1.5 inches Row Spacing: 9 inches Seeding Rates: See Table 2
Plot Activities	**1.** Heavy harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA. **3.** MCPA 600 Amine sprayed in-crop.	**1.** Cultivated and harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA. **3.** MCPA 600 Amine sprayed in-crop.
Equipment	Fabro Zero-till Drill with Atom Jet Openers	Fabro Zero-till Drill with Atom Jet Openers
Fertilizer (actual)	5.5 lbs/ac N 26 lbs/ac P cereal plots also received: 37.5 lbs/ac N 15 lbs/ac P 15 lbs/ac K 7.5 lbs/ac S	5.5 lbs/ac N 26 lbs/ac P cereal plots also received: 37.5 lbs/ac N 15 lbs/ac P 15 lbs/ac K 7.5 lbs/ac S
Harvest	August 9, 2011	August 11, 2011

Varieties used In the Trial:

Vivar Barley: A rough-awned six-row semi-dwarf feed barley that has high grain yields. Intermediate reaction in the field to scald and net blotch.

Murphy Oats: A forage oat bred specifically for use for silage/greenfeed production.

Pronghorn Triticale: A spring triticale that is susceptible to some races of stem rust.

Tucker Peas: Semi-leafless forage pea. Shorter and bushier than performance 40-10 peas.

Performance 40-10 Peas: A forage-type pea with a lot of vine to increase forage yields. Has a tendency to lie down.

Seeding Rates:

Seeding rates for pulse/cereal mixtures were based on recommendations from other trials, forage agronomists and results of our previous trials. The pulses were seeded at 75% their normal rate, while cereals were seeded at 50% to achieve a seeding rate of 7 plants/ft^2. All mono-species plots were based on 1000-kernel weight and germination in order to achieve 24 plants per square foot.

Table 2: Seeding Rates

Variety	Species	Seeding Rates (lbs. per acre)
Vivar	Barley	112
Murphy	Oats	102
Pronghorn	Triticale	124
Perf. 40-10 & Vivar	Peas & Barley	58+56
Perf. 40-10 & Murphy	Peas & Oats	58+51
Perf. 40-10 & Pronghorn	Peas & Triticale	58+62
Tucker & Vivar	Peas & Barley	55+56
Tucker & Murphy	Peas & Oats	55+51
Tucker & Pronghorn	Peas & Triticale	55+62

Results:

Table 3: Dapp Silage Yields & Nutritional Analysis

Variety	Yield @ 65% moisture (tons/ac)	Statistical Analysis (LSD)	CP (%)	TDN (%)
Tucker & Vivar	9.9	a	9.0	60.7
Murphy	9.4	a	7.3	61.2
Tucker & Murphy	8.7	ab	10.6	63.5
Perf 40-10 & Pronghorn	8.2	abc	14.8	67.2
Tucker & Pronghorn	7.2	bc	15.7	61.6
Pronghorn	7.0	bc	7.7	64.1
Vivar	6.9	bc	10.8	72.5
Perf 40-10 & Murphy	6.6	c	17.6	62.1
Perf 40-10 & Vivar	6.6	c	15.9	62.6

Standard Deviation = 0.73 ton/ac, LSD =1.31 CV = 9.3%

Table 4: Stony Plain Silage Yields & Nutritional Analysis

Variety	Yield @ 65% moisture (tons/ac)	Statistical Analysis (LSD)	CP (%)	TDN (%)
Vivar	10.0	a	10.1	66.0
Pronghorn	9.2	a	10.2	60.9
Murphy	9.0	a	8.6	57.1
Tucker & Vivar	8.9	a	16.2	65.1
Tucker & Pronghorn	8.7	a	15.6	61.0
Perf 40-10 & Pronghorn	8.6	a	13.1	61.5
Tucker & Murphy	8.4	a	12.3	58.2
Perf 40-10 & Murphy	6.4	b	12.8	57.4
Perf 40-10 & Vivar	4.1	c	15.7	66.9

Standard Deviation = 0.78 ton/ac, LSD = 1.4, CV = 9.58%

Average Yields & Index from 2 Locations:

I have taken the yield and indexes of the two sites and averaged them in the table below. The table is sorted by index not yield. The index tells you where varieties ranked for tonnage versus the others at each site with 100 being average.

In some cases there may be a variety with a lower average tonnage listed above one with higher tonnage. This is because some sites produced higher total yields than others and because of this the average tonnage is not a true picture of production over the two sites.

Table 5: Average Yields & Index from 2 locations

Variety	Yield @ 65% moisture (tons/ac)	Average Index
Tucker & Vivar	9.4	118
Murphy	9.3	115
Tucker & Murphy	8.6	107
Vivar	8.5	105
Perf 40-10 & Pronghorn	8.4	105
Pronghorn	8.1	101
Tucker & Pronghorn	8.0	99
Perf 40-10 & Murphy	6.5	81
Perf 40-10 & Vivar	5.4	67

Discussion:

At the Dapp site the mixture of Tucker/Vivar and the mono-cropped Murphy were the top yielding varieties The general trend at Dapp seems to be that the mixtures including Tucker peas performed better than the mixtures including Performance 40-10 peas and the mono-cropped varieties (with the exception of mono-cropped Murphy oats). This is contrary to what we usually see, which is the mono-cropped cereal outperforming the pea mixtures. The same trend as Dapp is well observed at Stony Plain also; in addition the mixtures including Tucker peas once again seemed to out preform the performance 40-10 mixtures. To be more accurate, all varieties yield significantly more than the Performance 40-10/Murphy mixture and the Performance 40-10/Vivar mixture.

In 2011, as with all years, there was a nutritional advantage to intercropping pulses with cereals but not always a yield advantage. Crude protein varied within each treatment but generally the mixtures that included peas tended to have higher protein content.

The nutritional content of the pulses mixtures is overall very good. There is more protein than in the straight cereals, and they still have more than adequate energy. The calcium and magnesium levels in the pulse silages are also more balanced for ruminant diets than in the straight cereal silage.

Economic Analysis:

There was approximately $75 less fertilizer per acre applied on the pulse trial versus the other silage trials. Since pulses are able to fix their own nitrogen there are significant cost saving through the reduced need for fertilizer. If we can achieve the same yields with the potential for better feed quality with an 80% reduction in fertilizer costs, this proves that including pulses in silage mixtures is a viable silage option.

The mixtures including Tucker peas and Vivar Barley were the cheapest to grow on a cost/ton basis when the varieties in the pulse trial were compared to the top yielding varieties in the cereal trials.

The higher nutritional quality of the pea mixtures allows lower cost forage sources to be included in the ration (which offsets the lower yield) and also circumvents the requirement of higher cost feed ingredients to fill any nutritional voids.

Late Seeded Silage

Kevin and Brian Ratke – SW-36-51-1 W5 (Stony Plain)
Richard and Daryl Krikke – SE-9-62-3 W5 (Neerlandia)

Objectives:

1. Compare silage production of new and commonly used species.
2. Summarize historical silage data.

Background:

A randomized complete block with 3 replicates of each treatment was used. Treatment size was 1.37 metres wide (6 rows with 9 inch spacing) by 6 metres long.

Table 1: Plot Information

Action	Neerlandia	Stony Plain
Seeding	June 13, 2011	June 28, 2011
Seeding Specifics	Depth: 1/2 inch Row Spacing: 9 inches Seeding Rates: See Table 2	Depth: 1/2 inch Row Spacing: 9 inches Seeding Rates: See Table 2
Plot Activities	**1.** Cultivated and harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA, Infinity & Axial	**1.** Cultivated and harrowed prior to seeding. **2.** Pre-emergent Round-Up & MCPA, Infinity & Axial
Equipment	Fabro Zero-till Drill with Atom Jet Openers	Fabro Zero-till Drill with Atom Jet Openers
Fertilizer (actual)	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S	75 lbs/ac N 30 lbs/ac P 30 lbs/ac K 15 lbs/ac S
Harvest	Harvested August 31, 2011 Barley – soft dough Oats – milk Triticale – early milk Millets – boot	Harvested August 30, 2011 Barley – late milk Oats – early milk Triticale – early milk Millets – boot

Varieties used In the Trial:

Vivar Barley:	A rough-awned six-row semi-dwarf feed barley that has high grain yields. Intermediate reaction in the field to scald and net blotch.
Murphy Oats:	A forage oat bred specifically for use for silage/greenfeed production.
Pronghorn Triticale:	A spring triticale that is susceptible to some races of stem rust.
Crown Millet:	Millet is an annual warm season grass. It needs warm temperatures to produce well, and should be seeded in mid-June. Proso millet has a panicle type seed head.
Golden German Millet:	Millet is an annual warm season grass. It needs warm temperatures to produce well, and should be seeded in mid-June. German millet has a foxtail type seed head. The foxtail millets are taller, later maturing, and well suited to forage production. However, the seeds can become quite sharp and cause eye and mouth irritation.
Millet King:	A red proso millet variety from Manitoba. It is an annual warm season grass. It needs warm temperatures to produce well, and should be seeded in mid-June. Proso millet has a panicle type seed head.
Siberian Millet:	Millet is a warm season grass. It needs warm temperatures to produce well, and should be seeded in mid-June. Siberian millet has a foxtail type seed head.

Seeding Rates:

Seeding rates (Table 2) were based on 1000-kernel weight and germination in order to achieve 24 plants per square foot. The millet was seeded by the pound according to recommendations by seed suppliers.

Table 2: Seeding Rates

Variety	Species	Seeding Rates (lbs. per acre)
Vivar	6 row, semi-dwarf RA Barley	112
Murphy	Forage Oat	102
Pronghorn	Triticale	124
Crown Millet	Red Proso Millet	25
German Golden Millet	German Golden Millet	20
Millet King	Red Proso Millet	25
Siberian Millet	Siberian Millet	20

Table 3: Neerlandia Silage Yields & Nutritional Analysis

Treatment	Yield @ 65% moisture (tons/ac)	*	CP (%)	TDN (%)	Ca (%)	P (%)	Mg (%)	K (%)
Murphy	6.1	a	12.5	69.3	0.73	0.41	0.20	1.78
Pronghorn	5.0	a	11.8	62.6	0.28	0.35	0.12	1.56
Vivar	2.2	b	8.6	59.0	0.33	0.35	0.16	2.29
Crown Millet	2.0	b	12.6	67.4	0.43	0.53	0.29	2.36
Millet King	1.8	b	13.8	67.1	0.59	0.50	0.31	2.42
Siberian	1.7	b	10.6	64.0	0.44	0.33	0.24	2.58
Golden German	1.4	b	14.8	67.2	0.67	0.40	0.29	3.65

*Statistical Analysis (LSD), Standard Deviation = 0.82, LSD = 1.51, CV = 28.7%

Table 4: Stony Plain Silage Yields & Nutritional Analysis

Treatment	Yield @ 65% moisture (tons/ac)	*	CP (%)	TDN (%)	Ca (%)	P (%)	Mg (%)	K (%)
Vivar	5.8	a	18.8	64.9	0.73	0.31	0.22	2.25
Murphy	5.6	a	18.1	64.5	0.47	0.29	0.23	2.85
Crown Millet	4.9	b	20.6	69.7	0.48	0.29	0.46	2.98
Pronghorn	4.1	bc	20.1	65.2	0.42	0.34	0.15	2.69
Millet King	4.0	bc	19.0	66.0	0.40	0.24	0.40	2.54
Siberian	3.5	c	21.7	65.5	0.63	0.27	0.50	3.58
Golden German	2.0	d	22.0	65.2	0.68	0.26	0.42	3.77

*Statistical Analysis (LSD), Standard Deviation = 0.38, LSD = 0.71, CV = 8.9%

Table 5: Summary of Average Yield & Index for 2009-2011 (5 trials)

Oat Variety	Yield @ 65% moisture (tons/ac)	Average Index
Murphy	8.0	142
Pronghorn	8.1	136
Vivar	6.9	108
Crown Millet	5.8	91
Millet King	5.8	85
Siberian Millet	5.1	76
Golden German Millet	4.3	62

Discussion:

Silage Yield

Cereal yields in previous years have been equal to or superior to the earlier seeded crops of the same varieties. This is contrary to other research done which indicates that seeding later will reduce yield. This was not the case in 2011, where we saw decreased yields in the barley, oats and triticale from seeding later. Seeding by mid-June did seem to create a yield loss in our area which is what most would expect.

It is very important to note that, even when seeded at the appropriate date (mid-late June) millet did not out-yield the late-seeded cereals. Millet is a C4 plant, and needs more heat to mature and due to this climate's cooler than normal growing season, millet did not perform as well as the other cereals. Millet tends to be slow to emerge but once established, grows rapidly. In the period which millet is establishing, the weed pressure must be very low. The cereals may be advanced enough at this point to compete with the weeds, but the millet is still very uncompetitive. We had numerous problems with flushes of volunteer canola in the late seeded trial which severely reduced yields. Appearances can also be deceiving; the millet looks very thick and like a great crop, but contains a higher percentage of water than other crops(less dry matter yield) and will dry down significantly.

The Golden German millet had the lowest yield at both sites this year which is what we have experienced in previous years, this combined with the fact that Golden German tends to be harder to chop and therefore harder on machinery leads me to believe that it is not an ideal crop for our area. Also if Golden German Millet is left standing to be grazed and becomes over mature, the dense bristly heads can lead to lump jaw or eye lesion problems in cattle.

The proso type millets (Red Proso (crown) and Millet King) are an earlier maturing variety 60-75 days (for seed production) as compared to foxtail types such as Siberian and Golden German which can take up to 75-90 days to reach maturity (for seed production). The earlier maturing varieties tend to have a higher yield which was the general trend in 2011 within the millet varieties. The Millet King variety tends to have larger heads than crown millet, which usually translates into a yield advantage, but this was not seen this year.

It would appear that millet is not an ideal cropping choice in our climate as the cereals have had superior yields and millet is very susceptible to frost damage. However, a lot of producers in our area have had success with millet for swathgrazing (see swathgrazing demo) and for those producers looking for a variety I would suggest they go with a proso type millet and get it in the ground as early as possible (before the 15th of June).

Silage Quality

Because our nutritional analysis is not replicated, it is hard to make any concrete assertions, but here are some general trends we have seen.

Golden German Millet has had very high potassium (K) levels in all five years we have tested it; however normally it has also had adequate calcium (Ca) levels and high magnesium (Mg) levels to offset any potential tetany problems. The general rule of thumb is a K level above 2.2% combined with Ca level below 0.6% and a Mg level below 0.3% (all on DM basis) will have the potential to cause animal performance problems, specifically tetany problems (AARD, 2004). It is always important to test your feeds and have a qualified nutritionist balance your rations to prevent any problems that may arise and to also determine to most economical use of your available feeds. If you ever have any concern about any feed please feel free to contact GRO to pinpoint any potential problems.

Sources:

1. AAFRD 2004- Beef Ration Rules of Thumb
   Agdex 420/52-4

Swath Grazing Demonstration

Greg Thompson – Fort Assiniboine

Objective:

1. Compare animal usage, yield, palatability and quality of both non-traditional and traditional varieties to determine suitability in a swath grazing system.

Background:

Swath grazing is a management practice which is becoming increasingly popular in Western Canada as a way to extend the grazing season. Swath grazing is a practice where annual or perennial crops are swathed and left lying to be grazed by cattle in the winter months. Barley and oats are the most popular cereals for swath grazing; however, other crops such as millet, peas, triticale, and rye are becoming increasingly popular.

Swath grazing is an economical winter feeding strategy which reduces the costs of winter feed, labour, machinery, and manure management costs. Electric fencing is used to limit access to the swaths to limit intake and reduce waste.

Cereals are seeded in mid-May to early June and then swathed from late August to mid-September before the killing frost. The time of seeding and harvest can greatly affect both yield and quality of the feed. Early seeding provides more growing days resulting in higher yields, later seeding results in high quality of feed but the risk of frost damage increases. The ideal stage of growth to maximize quality and yield would be at soft to late dough stage for swathing for most varieties.

Method:

The purpose of this demonstration was to observe how the crops grew, matured and yielded while in a producer managed situation to give the local producers insight into how these crops would perform in their own swath grazing systems and not just on a small plot scale. The primary purpose of this demonstration was to observe any preference or refusal trends in the cattle with regards to the cereals as well as other factors such as wastage.

On July 1st the project was seeded in strips running in a North-South direction (Millet-5 acres, Spring Triticale-12 Acres, Winter Triticale-9 acres, Spring/Winter Triticale-18 acres). The varieties being tested were: Crown millet, Bunker triticale (spring) and Tyndal triticale (winter) and a mixture of the spring and winter triticale.

The cereals were swathed September 24 and then cattle were then allowed to graze from December 17th onward. Feed samples were taken and submitted for testing in mid-September, mid-October, and mid-December. Yields were also measured in mid-September when the first samples were taken.

Results:

			Nutritional Analysis							
VARIETY	Date Sampled	Yield @ 65% Moisture	Moisture	ADF	CP	TDN	Ca	P	Mg	K
Spring Triticale	Sept 19	12.37	71	43.2	10.1	55.3	0.24	0.33	0.10	2.16
	Oct 19		33	37.8	9.9	59.5	0.24	0.23	0.10	1.79
	Dec 15		31	33.6	12.6	62.7	0.23	0.28	0.11	1.42
Winter Triticale	Sept 19	2.98	86	29.4	19.3	66.0	0.63	0.70	0.15	5.73
	Oct 19		47	27.8	17.2	67.2	0.46	0.40	0.12	3.96
	Dec 15		55	31.2	14.0	64.6	0.44	0.44	0.17	3.60
Spring/Winter Triticale Mix	Sept 19	7.35	79	39.6	14.2	58.0	0.33	0.43	0.11	3.10
	Oct 19		50	35.8	8.4	61.0	0.20	0.26	0.08	1.69
	Dec 15		38	32.0	10.4	64.0	0.23	0.28	0.09	1.37
Crown Millet	Sept 19	5.83	84	34.8	15.3	61.8	0.50	0.38	0.33	3.84
	Dec 15		51	51.0	18.8	49.2	0.48	0.33	0.27	2.59

Discussion:

At the time I am writing this report the cattle are still grazing the project so I cannot comment on grazing days yet. 147 head were introduced on Dec 17th and on January 2nd and additional 15 head were added. The results of the grazing days/stocking rates will be published in a future newsletter.

This year the cattle chose to graze the winter triticale first, followed by the millet and then the mix of winter and spring triticale and lastly the spring triticale. The winter triticale remains vegetative and therefore would have a lower fibre content making it most palatable. Millet is a later maturing crop, which would explain why the cattle have selected it second. Immature forages tend to have a lower fibre content which results in increased digestibility and results in higher dry matter intake levels.

Triticale has been said to cause palatability problems in cattle as well as possible lump jaw issues due to lesions in the mouth caused by rough awns. Bunker triticale, which was used in this trial, is a reduced awn variety which should eliminate any potential lump-jaw problems.

After the snow in December while I was taking the third feed samples, the stubble between the swaths of the spring/winter mix and winter triticale had so much healthy regrowth after it was swathed that is was green between the swaths (see pictures). This forage has kept its quality well (holding its green colour) and will provide additional grazing aside from what is in the swaths.

As you can see in the above table, the spring triticale yielded the highest and the winter triticale yielded the lowest. Now what is really interesting is how the winter triticale compares to the other crops nutritionally. If you look at the CP and TDN values you can see they are very high. This is very high energy for a plant in a vegetative state. Winter triticale also has a higher calcium level than spring triticale. Something else to note is the high potassium levels in the winter triticale which can lead to potential tetany issues. As long as producers are aware of the possible issues they can make the necessary changes to their feeding program to avoid any potential problems. Just another reason you should be glad you tested all you feed this year!….you did test your feed this year didn't you?

Feeding vs. Grazing

I keep including this paragraph somewhere in our reports in the hope that it will eventually encourage someone to try swath grazing. Custom bagged silage rates (AAFRD 2011) for our area are $15/ton, pit cereal or corn silage $13/ton. These prices include cutting, chopping, hauling, packing and plastic. When we analyse our cost to produce silage it has been around $15 per ton. This validates the general rule of thumb; that it costs a producer as much to grow the feed as it does to harvest and store it. This is without mentioning the cost of delivering the silage back to the cows; tractor, silage wagon and bunks. The manure would also be spread in the field by the cows for free, not spread by you at a cost. Stored manure (pens, bedding packs, sheds) has an 80-90% nutrient loss versus manure deposited in the field by the cattle. If you factor all the costs into the equation, a producer could waste 50% of the feed that was left as swath grazing or grazed standing, and it would still cost less than mechanical harvest and storage. Do the math; it makes sense.

Ropin the Web– 2011 Custom Rates
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/inf13387

Pictures

The picture on the left (spring triticale) has far less below canopy ground cover than the picture on the right (spring/winter triticale mix). Adding in the winter triticale has created a plant population with essentially two different maturities (winter will remain in vegetative state) allowing for an increase quality of the overall feed and filling in any bare spots on the soil surface.

Here you can see the spring triticale ground cover between swaths (left) and the spring/winter mix (right) that I was discussing above. There is a lot of grazing material between the swaths of the strips which include winter triticale. This year has been an ideal grazing year for this type of situation because there has not been a significant amount of snow to cover up this additional feed.

Western Forage Testing Trial

Ken Anderson – NW-33-59-2 W5 (Barrhead)

GRO has partnered with Agriculture and Agri-Food Canada to participate in the Western Forage Testing System (WFTS) which was developed in 1994 to test new forage varieties across western Canada. This is the testing process that all varieties must go through before registration is granted and it also gives background information on performance of the variety before it is released to the public.

The forage plots were seeded in the spring of 2010 and harvested for the first time in 2011. This is a four year trial and we will be harvesting at least one cut per year (two if growing conditions permit) and results will be compiled in the Western Forage Testing System Report at the end of the four year trial. We will also be publishing our own local results in each annual report.

The following table outlines the results from the first year's harvest. The yields are reported as wet yields and subsequent year's data will be corrected to 65% moisture (like the silage trials).

Table 1: Plot Information

Action	Tawatinaw
Seeding	June 16, 2010
Seeding Specifics	Depth: 0.5 inches Row Spacing: 8 inches Seeding Rates: See Table 2
Year 1	Sprayed Basagran June 9,2011 Harvested August 3, 2011

Table 2: Red Clover

Variety	Wet Yield (tons/acre)
Starfire	5.2
Altaswede	6.3

Table 3: Orchardgrass

Variety	Wet Yield (tons/acre)
Kay	3.8
NS09-OG-01	3.3
OG426	3.1
96 OG-2	2.5

Table 4: Alfalfa

Variety	Wet Yield (tons/acre)
Beaver	6.0
AC Blue J	4.0
Rambler	4.3
Rangelander	4.9
Radiant II	3.6
TS-3025	4.8
TS-4002	4.3
NS09-ST01	4.0
NS09-MF01	4.2
VT 09001	4.8
VT 09002	4.2
VT 09003	4.3
PF 09010	4.1
PC 09050	5.3
PC 09051	6.0
PC 09070	4.2
PC 09080	4.0
PC 09081	3.8
PC 09082	4.8
VC 09101	4.3
VC 09102	4.6
L333HD	4.2

Table 5: Sanfoin

Variety	Wet Yield (tons/acre)
Nova	7.2
LRC05-3900	5.6
LRC05-3901	5.5
LRC05-3902	5.3

Fertilizer Trial/Sod-Seeded Legume Trial

Heifer Pasture - SE-23-61-26 W4

Objectives

1. Evaluate the yield effects of fertilizing older pasture stands with varying rates of ammonium sulphate
2. Establish legumes in paddock Y8 by seeding into sod with varying rates of fertilizer
3. Determine if there is a yield or quality advantage from the legumes that were sod-seeded into paddock Y8.

Background

We selected 3 paddocks (Y8, R5, and Y4) for the trial based on accessibility, uniformity and similar forage composition. In each of the three paddocks we split them into strips that ran in an east/west direction and then fertilized the strips with ammonium sulphate (21-0-0-24) at a rate of 400 lbs/ac, 200 lbs/ac or a check which received no fertilizer using an AGCO TerraGator floatation applicator on May 31, 2011.

We chose to use 21-0-0-24 for this trial as it was the most stable form on N and the most soluble form of S. In a perfect world it would rain 2 inches the evening after you float on your fertilizer and since we don't live in a perfect world we wanted something that would not degrade as much through atmospheric losses as say 46-0-0 would from sitting on the surface. Also, plants uptake S in the form or sulphate and the 21-0-0-24 is 100% sulphate, making it the most efficient source of S for the plants. An additional benefit to using 21-0-0-24 is that it tends to acidulate a zone surrounding each particle of fertilizer which helps solubilize other nutrients which are otherwise unavailable to the plant, making them more available for uptake.

In Paddock Y8 we also seeded in a blend of AC Grazeland alfalfa (reduced bloat alfalfa for Pickseed), birdsfoot trefoil, cicer milk vetch, and white clover at a rate of approximately 20 lbs/acre on May 12, 2011 using a John Deere coulter type drill. Forage cages were placed in the paddocks on May 31, 2011 and Clipping were done on July 15th, August 15th and September 15th to determine yield. Feed samples from Y8 were also taken to track and changes in quality from the addition of the legumes to the stand and legume counts were recorded to determine amount of legumes actually established.

Results
Table 1: Yield Data

	Y8											
Cage	A1	A2	A3		B1	B2	B3		C1	C2	C3	
Date of Clipping	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)
15-Jul-11	3.9	0.9	4.5	**3.1**	3.3	1.6	4.0	**3.0**	0.8	0.5	0.5	**0.6**
15-Aug-11	2.6	0.6	1.7	**1.6**	1.6	0.5	1.8	**1.3**	0.7	0.3	0.4	**0.5**
15-Sep-11	1.4	0.5	0.5	**0.8**	1.0	0.7	1.4	**1.0**	0.6	0.2	0.7	**0.5**
Total production/cage	7.8	2.0	6.8		5.9	2.8	7.2		2.1	1.0	1.6	
Average production/cage	2.6	0.7	2.3		2.0	0.9	2.4		0.7	0.3	0.5	
Average Yield 2011 growing season (total production)				**5.5**				**5.3**				**1.6**

	R5											
Cage	A1	A2	A3		B1	B2	B3		C1	C2	C3	
Date of Clipping	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)
15-Jul-11	3.3	2.7	3.9	**3.3**	2.4	2.4	2.2	**2.3**	0.3	3.7	1.4	**1.8**
15-Aug-11	1.1	1.3	0.4	**0.9**	0.7	1.7	1.7	**1.4**	0.2	2.9	1.1	**1.4**
15-Sep-11	0.5	1.8	0.7	**1.0**	0.7	0.8	0.6	**0.7**	0.5	0.6	0.6	**0.6**
Total production/cage	4.9	5.7	5.0		3.8	4.9	4.4		0.9	7.2	3.0	
Average production/cage	1.6	1.9	1.7		1.3	1.6	1.5		0.3	2.4	1.0	
Average Yield 2011 growing season (total production)				**5.2**				**4.4**				**3.7**

	Y4											
Cage	A1	A2	A3		B1	B2	B3		C1	C2	C3	
Date of Clipping	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)	tons/ac	tons/ac	tons/ac	Ave yield/clip (tons/ac)
15-Jul-11	4.5	5.4	2.5	**4.1**	3.7	3.2	1.7	**2.9**	1.4	0.9	0.7	**1.0**
15-Aug-11	2.8	1.2	1.3	**1.7**	1.5	1.8	0.4	**1.2**	0.5	0.6	0.3	**0.5**
15-Sep-11	2.3	0.5	0.7	**1.2**	0.6	0.8	0.8	**0.7**	0.1	0.2	0.1	**0.1**
Total production/cage	9.6	7.0	4.4		5.8	5.8	2.8		2.0	1.7	1.1	
Average production/cage	3.2	2.3	1.5		1.9	1.9	0.9		0.7	0.6	0.4	
Average Yield 2011 growing season (total production)				**7.0**				**4.8**				**1.6**

Treatment Group "A" - 400 lbs/ac 21-0-0-24
Treatment Group "B" - 200 lbs/ac 21-0-0-24
Treatment Group "C" - Control (No Fertilizer)

All yield values have been corrected to 65% moisture

Yields in the paddocks with the higher rate of fertilization had the highest yields, followed by the lower rate and the control groups (no fertilizer) has the lowest yields. This is what we expected to see and even in the pasture the line between the different rates was very easy to find even without measurement the benefits were visible to me.

Table 2: Nutritional Data from Paddock Y8

Treatment	Date Sampled	Moisture	CP	TDN	ADF	Ca	P	K	Mg
Y8A	July 15	75	15.8	61.3	35	0.37	0.28	2.5	0.16
	Aug 15	78	16.1	58.4	39	1.29	0.36	2.9	0.18
	Sept 15	54	13.6	67.6	27	0.55	0.32	2.4	0.20
	Year 1 Average	69	15.2	62.4	34	0.74	0.32	2.6	0.18

Treatment	Date Sampled	Moisture	CP	TDN	ADF	Ca	P	K	Mg
Y8B	July 15	74	15.7	62.9	33	1.47	0.34	2.7	0.16
	Aug 15	74	16.2	65.1	31	0.39	0.40	2.7	0.18
	Sept 15	49	13.2	66.3	29	0.46	0.37	2.4	0.16
	Year 1 Average	66	15.0	64.8	31	0.77	0.37	2.6	0.17

Treatment	Date Sampled	Moisture	CP	TDN	ADF	Ca	P	K	Mg
Y8C	July 15	67	13.5	64.4	31	0.46	0.33	2.0	0.18
	Aug 15	67	16.9	65.5	30	0.47	0.33	1.8	0.17
	Sept 15	46	12.3	66.2	29	0.59	0.31	1.8	0.18
	Year 1 Average	60	14.2	65.4	30	0.51	0.32	1.9	0.18

Treatment Group "A" - 400 lbs/ac 21-0-0-24
Treatment Group "B" - 200 lbs/ac 21-0-0-24
Treatment Group "C" - Control (No Fertilizer)

All values are reported as a %

Generally we can see an increase in quality from the July clipping to the August clipping then there is a drop in the September clipping, this is due to the lower quality regrowth in the fall and for the purposes of this discussion we will examine the trends from July to August and in the subsequent years of this trial we will be looking at yearly averages.

By adding nitrogen to the pasture we hope to also draw several other nutrients – including water- into the plant which is reflected in our nutrient tables from paddock Y8 when you look at the overall trend of say calcium for example, we see that as the plant is drawing the nitrogen from the soil and it is also drawing in calcium (and other minerals) and water (important in a drought year).

Also there is an increase in protein levels of the stands which partly is due to the increased levels of pure N in the soil. However, since the soils were very deficient in S and S is a major component of amino acid synthesis (the building blocks of protein) it wasn't until the plant could bring in more S that it could begin using the N more efficiently or maintain the crucial N:S ratio.

Economics

Average Total Forage Production	Treatment Group A	Treatment Group B	Treatment Group C
Tons/ac @ 65% Moisture	5.9	4.8	3.0
Tons/acre DMB	2.07	1.69	1.05
lbs/ac DMB	4144	3374	2100
Stocking Rate	55.3	45.0	28.0
AUM	55.3	45.0	28.0
Added Value	$1078.35	$877.50	$546.00

Grazing Fee = $0.65/hd/d for approx 1000lb animal (or $19.50/hd/month)
All calculations based on a 10 acre paddock

Treatment Group "A" - 400 lbs/ac 21-0-0-24
Treatment Group "B" - 200 lbs/ac 21-0-0-24
Treatment Group "C" - Control (No Fertilizer)

As you can see from the economic analysis above the additional value from adding ammonium sulphate at a rate of 200lbs/ac is $331.50/month since we are able to graze and additional 17 AUM (17x$19.50) and the additional value from adding ammonium sulphate at a rate of 400lbs/ac is $532.35/month since we were able to graze an additional 27.3 AUM (27.3x$19.50) due to the increased forage production.

If we were to graze this pasture for the average of 122 days, or 4 months (GRO's average grazing season from the Heifer Pasture) then the additional forage value for the 10 acres over the grazing season would be; $1 326.00 for the rate of 200lbs/acre of ammonium sulphate and $2 129.40 for the fertilizer rate of 400lbs/acre.

If the fertilizer was priced at $425/MT this spring then it would have cost $77.13/ac to fertilize at 400lbs/ac and $38.57/ac to fertilize at 200 lbs/ac. If we are talking about fertilizing a 10 acre paddock then it will cost us $771.30 at 400lbs/ac and $385.70 at 200lbs/acre. As you can see this cost is more than recovered within the period of one grazing season, let alone the residual effects of subsequent years.

Additional data from following years will be compiled in future annual reports. Stay tuned!

Pictures

400 lbs/ac 21-0-0-24 (left), 200 lbs/ac 21-0-0-24 (right)

TerraGator being filled with fertilizer donated by Flatlander

Turnip Grazing Demonstration

This year we planned a turnip grazing demonstration with a local producer in Tawatinaw. However, due to the moisture this year he was unable to seed and the demonstration will be established in the upcoming year. If you have any interest in trying turnips or just following the progress of the demonstration be sure to renew your memberships for the 2012 season.

I was able to find another local producer who had already seeded in some turnips for grazing this year and with his cooperation was able to do some quality sampling and yield measurements on his turnips and get some data to producers on the benefits on grazing turnips his experience with it.

Table 1: Yield and Nutritional Analysis

				%					
Sample Date	Wet Yield (tons/ac)	Moisture (%)	Yield @ 65% Moisture (tons/acre)	CP	TDN	Ca	P	K	Mg
September 20	46.04	90.0	13.2	18.3	76.3	2.06	0.24	1.75	0.31

Notes: Sample was very high in sodium, cattle will need access to clean water at all times, should not be left to eat snow as a water source. Also very high in calcium, can lead to problems close to calving.

The first thing you will notice when you look at the feed analysis is the high moisture content of the plant. Turnips will typically have 85-90% moisture and this moisture will contribute to a significant portion of the water requirements of the animal. However the turnips also has a high sodium content which will require that the animals must always have access to clean water at all times and using snow as a water source is not recommended. The cooperator in this project did notice that the cattle were spending more time at the dugout than usual.

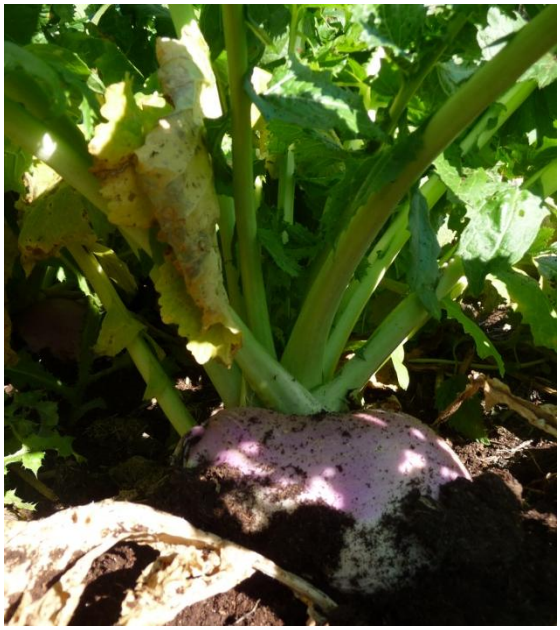
Secondly we will note that the crude protein (CP) is very high at 18.3%. Cattle will require 7% protein in mid-gestation, 9% protein in late gestation and 11% protein after calving (appendix 1). Turnips will satisfy a cow`s protein requirement right through calving and into lactation. However, caution should be used when grazing turnips in the mid-late gestation period due to their high calcium content. Feeding excess amount of calcium prior to calving can actually cause milk fever issues at parturition, which is why a pre calving type mineral is often fed 6-8 weeks before calving which has a lower calcium content to prevent these issues.

The energy content or TDN (total digestible nutrients) is also very high and would be considered closer to that of oat grain or a screening pellet which needs to been taken into account when developing your feeding program.

Most producers will broadcast the turnip seed onto the soil bed, it is important not to seed deeper than ½ inch to ensure good emergence. Seeding rates should be about 2-4 lbs per acre in a pure stand and 1.5-2 lbc/ac when intercropping with say oats for example. Fertilizer requirements for turnips are similar to wheat. Early weed control is very important with turnips as they are not competitive until a canopy is formed and there are few products out there that can be sprayed (or cost-effective ones). A really good pre-seed burn is the best method of weed control. Turnips are ready for grazing 60-70 days after planting and often producers will allow cattle access to the turnips at least 6 weeks before a killing frost to graze the tops and allow the plant to regrow and have the cattle enter again after the killing frost to graze the tops and the bulbs. Cattle will have no problems digging out the bulbs from the frozen ground and readily consume them; some people consider turnips to be 'cow candy'. When I was out sampling in the field the cattle were lined up at the fence bellowing to be let in to the turnips, obviously they remember turnips from the previous year.

There are some cautions to be aware of when it comes to grazing turnips, and just as with any new crop or system adjustments may need to be made to do it successfully. Turnips can create a choking hazard for the animals depending on the shape and size of the bulb and the carelessness of the animal. Also the cattle have been reported to have extremely bad breath while grazing turnips – a mix between propane and horseradish, and although unpleasant, not dangerous. It is important to test your feed for nitrates as turnips are a high risk crop and also be aware of the risk for glucosinolates which can affect thyroid function in cattle.

Turnips can be an ideal choice for extending the grazing season and a cost effective choice as well.



Appendix 1 – Silage Quality

This page is intended as a quick guide only. For more information consult the Silage Manual available from Alberta Agriculture & Food (AAF), or your local animal nutritionist.

Harvest timing and storage are the most critical factors influencing nutritional quality of silage. Harvest should take place as near to 65% moisture as possible (see Table 1 for species timing) as yield, nutrition, packing and ensiling are optimized. Drier forage packs poorly (leads to rotting/mould) while wet crops reduce intake and increase clostridial bacteria growth.

It is very important to test any forage that is fed to cattle, but especially critical with silage as the amount of moisture can vary significantly. Knowing the moisture level will minimize under or over feeding.

When looking at the feed test always look at the dry matter column. This gives the amount of nutrients in the feed minus the water (which has no nutritional value). Some of the more important measures you will find on the feed test are:

- Crude protein (CP) measures of the amount of total protein in the feed. In general, beef cows need 7% CP in early to mid-gestation, 9% mid to late gestation and 11% for lactation.
- Total digestible nutrients (TDN) is a measure of energy. Normal values are: grass/alfalfa 59-62% and cereal forage 62-64%.
- Calcium (Ca) should be above 0.3%. Calcium must be in at least a 1:1 ratio with phosphorus, but no more than 7:1. Legumes are high in calcium, grasses are moderate.
- Phosphorus (P) should be above 0.2%. Grain/grain forages are high in phosphorus and usually require supplementation of calcium and/or magnesium.
- Magnesium (Mg) should be above 0.2%.
- Potassium (K) should be below 2%. Animals eating forage containing high potassium require supplementation of calcium and/or magnesium.

Table 1: Harvest Timing of Forages for Silage

SPECIES	IDEAL HARVEST	ADDITIONAL INFO
Barley	Soft Dough	
Corn	2/3 Line on kernel or 70% whole plant moisture	May require waiting for a killing frost. Will not wilt.
Fababeans	One or two bottom pods on ¼ to 1/3 of the plants turn brown.	Store after wilting.
Oats	Late Milk	
Peas (Forage/Grain)	First Pods Wrinkle	Store after wilting.
Sunflowers	Back of head turns yellow and the leaves around head turn brown.	May require waiting for a killing frost. Will not wilt.
Millet (Proso/Foxtail)	Late Milk/Early Heading	Store after wilting.
Triticale	Soft Dough	

Appendix 2 - Yield Performance as % of Check

2011a - Stony Plain ; 2011b - Dapp; 2011c - Neerlandia

2010a - Tawatinaw; 2010b - Stony Plain; 2009a - Dapp/Barrhead; 2009b - Stony Plain; 2008a - Dapp; 2008b - Stony Plain

2007a - Westlock; 2007b - Stony Plain; 2006a - Westlock; 2006b - Stony Plain; 2005a - Westlock; 2005b - Stony Plain;

2004a - Westlock; 2004b - Stony Plain; 2002 - Pickardville;2001a- Pickardville, 2001b- Stony Plain;

FEED BARLEY (Check: 2007-2011 AC Metcalfe; 1998 - 2006 Harrington)

VARIETY	*2011a*	*2011b*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
AC Harper [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	89	96	81	116	**104**
AC Lacombe [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	66	90	135	101	**106**
AC Rosser [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	77	87	116	102	**102**
Alston [6R]	-	-	-	-	-	-	92	88	-	-	-	-	-	-	-	-	-	-	-	**90**
B-2316 [2R]	-	-	-	-	-	-	-	-	94	104	108	101	-	-	-	-	-	-	-	**102**
B-2657 [2R]	-	-	-	-	-	-	-	-	102	105	124	100	-	-	-	-	-	-	-	**108**
BT 577 [6R]	-	-	-	-	-	-	99	105	-	-	-	-	-	-	-	-	-	-	-	**102**
BT 584 [6R]	105	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**101**
BT 974 [6R]	-	-	-	-	-	-	-	-	-	-	107	85	-	-	-	-	-	-	-	**96**
BT 980 [6R]	-	-	-	-	-	-	86	95	-	-	-	-	-	-	-	-	-	-	-	**91**
Busby [2R]	-	-	89	110	76	93	-	-	-	-	-	-	-	-	-	-	-	-	-	**92**
Calder [2R]				-	-	-	-	-	-	-	-	-	100	110	82	96	95	-	-	**97**
CDC Austenson [2R]	112	126	103	113	98	115	-	-	-	-	-	-	-	-	-	-	-	-	-	**111**
CDC Bold [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97	108	103	**103**
CDC Coalition [2R]	89	108	-	-	97	113	109	113	117	110	-	-	-	-	-	-	-	-	-	**107**
CDC Cow boy [2R]	-	-	-	-	-	-	98	90	86	98	95	100	93	114	-	-	-	-	-	**97**
CDC Dolly [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	100	100	99	104	**98**
CDC ExPlus [2R]	114	93	72	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**
CDC Helgason [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	86	106	92	110	**98**
CDC Mindon [2R]	-	-	-	-	75	101	106	97	99	90	-	-	-	-	-	-	-	-	-	**95**
CDC Trey [2R]	-	-	-	-	92	98	-	-	111	108	103	99	110	106	90	88	98	-	-	**100**
Celebration [6R]	92	93	104	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**89**
Chigw ell [6R]	123	106	112	105	88	103	-	-	-	-	-	-	-	-	-	-	-	-	-	**106**
Conlon [2R]	-	-	-	-	-	-	-	-	92	93	90	103	102	103	-	-	-	-	-	**97**
FB205 [2R]	84	88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**86**
Formosa [2R]	-	-	-	-	-	-	-	-	99	96	94	91	-	-	-	-	-	-	-	**95**
Gadsby [2R]	108	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**108**
Harrington [2R]	-	-	-	-	-	-	-	-	-	-	100	100	100	100	100	100	100	100	100	**100**
HB08304	82	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**94**
HB 705	-	-	-	-	75	91	-	-	-	-	-	-	-	-	-	-	-	-	-	**83**
VARIETY	*2011a*	*2011b*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
Kasota [6R]	-	-	-	-	-	-	-	-	-	-	95	86	94	129	133	89	72	122	71	**99**
Mahigan [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	121	63	**84**
Manny [6R]	-	-	-	-	-	-	-	-	-	-	100	88	101	125	135	64	-	-	-	**102**
New dale [2R]	-	-	-	-	-	-	-	-	-	-	99	109	-	-	-	-	103	101	120	**106**
Niska [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93	75	109	**92**
Norman [2R]	97	102	97	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**97**
Rivers [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	84	98	97	102	**94**
Seebe [2R]	83	108	96	105	84	108	112	109	-	-	107	101	114	117	86	85	91	83	100	**99**
Stander [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	125	-	**125**
Sundre [6R]	109	84	105	68	118	103	89	99	118	111	110	95	113	126	-	-	-	-	-	**103**
SR 410 [6R]	-	-	-	-	-	-	94	89	-	-	-	-	-	-	-	-	-	-	-	**92**
SR 412 [6R]	-	-	-	-	-	-	93	87	-	-	-	-	-	-	-	-	-	-	-	**90**
TR04719 [2R]	-	-	-	-	-	-	-	-	-	-	109	111	-	-	-	-	-	-	-	**110**
Trochu [6R]	-	-	-	-	-	-	-	-	-	-	104	86	106	111	135	94	84	163	85	**108**
Vivar [6R]	109	101	125	97	86	111	108	101	109	126	110	101	97	101	135	97	107	136	118	**109**
Westford [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	91	**84**
Xena [2R]	112	124	99	110	96	111	102	115	121	118	116	125	102	114	88	101	96	104	125	**109**

MALT BARLEY (Check: 2007-2011 AC Metcalfe; 1998 - 2006 Harrington)

VARIETY	*2011a*	*2011b*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
AC Bountiful [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105	110	**108**
AC Metcalfe [2R]	100	100	100	100	100	100	100	100	100	100	107	93	104	99	54	85	100	90	110	**97**
Bentley [2R]	89	111	97	93	74	99	-	-	-	-	-	-	-	-	-	-	-	-	-	**94**
CDC Anderson [6R]	102	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**99**
CDC Battleford [6R]	-	-	-	-	-	-	-	-	94	100	109	93	109	93	100	92	94	-	-	**98**
CDC Clyde [6R]	-	-	-	-	75	96	98	92	100	113	95	97	108	103	-	-	-	-	-	**98**
CDC Copeland [2R]	-	-	-	-	78	112	112	110	-	-	-	-	-	-	82	71	94	76	120	**95**
CDC Kamsack [6R]	-	-	108	86	77	88	-	-	-	-	-	-	-	-	-	-	-	-	-	**90**
CDC Kendall [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	72	93	99	103	**94**
CDC Kindersley [2R]	91	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**96**
CDC Mayfair [6R]	114	93	103	73	93	94	-	-	-	-	-	-	-	-	-	-	-	-	-	**95**
CDC Meredith [2R]	91	106	99	98	97	109	-	-	-	-	-	-	-	-	-	-	-	-	-	**100**
CDC Polarstar [2R]	91	102																		
CDC Reserve [2R]	92	97	98	91	78	95	-	-	-	-	-	-	-	-	-	-	-	-	-	**92**
CDC Select [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98	83	93	-	-	**91**
VARIETY	*2011a*	*2011b*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	Average
CDC Sisler [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	106	85	87	-	-	**93**
CDC Springside [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105	84	99	-	-	**96**
CDC Stratus [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	-	**102**
CDC Tisdale [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	97	91	-	-	**101**
CDC Thompson [2R]	91	85	97	89	71	77	-	-	-	-	-	-	-	-	-	-	-	-	-	**85**
CDC Yorkton [6R]	-	-	-	-	-	-	-	-	109	103	-	-	-	-	133	96	-	-	-	**110**
Cerveza	108	106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
Champion [2R]	96	125	108	102	103	111	117	109	115	99	-	-	-	-	-	-	-	-	-	**109**
Conrad [2R]	-	-	-	-	-	-	-	-	-	-	110	107	109	106	-	-	-	-	-	**108**
Excel [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	163	105	**121**
Harrington [2R]	-	-	-	-	-	-	-	-	-	-	100	100	100	100	100	100	100	100	100	**100**
Lacey [6R]	-	-	-	-	-	-	-	-	-	-	98	93	-	-	126	57	-	-	-	**94**
Legacy [6R]	-	-	-	-	-	-	-	-	115	115	112	92	90	94	140	93	81	120	134	**108**
Major [2R]	105	105	99	110																**105**
McLeod [2R]	-	-	-	-	-	-	-	-	107	108	111	111	97	109	98	92	-	-	-	**104**
Merit [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	98	99	70	100	**92**
Merit 16 [2R]	-	-	-	-	-	-	95	98	-	-	-	-	-	-	-	-	-	-	-	**97**
Merit 57 [2R]	108	128	96	126	-	-	130	112	-	-	-	-	-	-	-	-	-	-	-	**117**
New dale [2R]	-	-	-	-	87	109	-	-	-	-	-	-	-	-	-	-	-	-	-	**98**
Niobe [2R]	93	98	103	106	87	98	121	104	-	-	-	-	-	-	105	91	94	-	-	**100**
Ponoka [2R]	99	128	95	109	-	-	114	111	109	102	108	97	110	106	74	90	-	-	-	**104**
Robust [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	121	92	**98**
Stellar [6R]	112	88	103	82	-	-	82	91	108	110	106	79	-	-	-	-	-	-	-	**96**
TR 03661	-	-	-	-	-	-	-	-	-	-	-	-	99	103	-	-	-	-	-	**101**
TR 05102 [2R]	-	-	-	-	-	-	129	104	-	-	-	-	-	-	-	-	-	-	-	**117**
TR 05104 [2R]	-	-	-	-	-	-	115	96	-	-	-	-	-	-	-	-	-	-	-	**106**
TR 05912 [2R]	-	-	-	-	-	-	108	82	-	-	-	-	-	-	-	-	-	-	-	**95**
TR 05915 [2R]	-	-	-	-	-	-	101	88	-	-	-	-	-	-	-	-	-	-	-	**95**
TR 05669 [2R]	-	-	-	-	-	-	98	104	-	-	-	-	-	-	-	-	-	-	-	**101**
TR 05671 [2R]	-	-	97	108	111	103	92	106	-	-	-	-	-	-	-	-	-	-	-	**103**
TR 06294 [2R]	-	-	104	100	94	110	-	-	-	-	-	-	-	-	-	-	-	-	-	**102**
TR 06297 [2R]	-	-	-	-	82	107	-	-	-	-	-	-	-	-	-	-	-	-	-	**95**
TR 06389 [2R]	-	-	-	-	-	-	121	110	-	-	-	-	-	-	-	-	-	-	-	**116**

VARIETY	*2011a*	*2011b*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
TR 06673 [2R]	-	-	-	-	-	-	121	94	-	-	-	-	-	-	-	-	-	-	-	**108**
TR 07114 [2R]	-	-	97	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**99**
TR 07728 [2R]	106	123	101	115	92	114	-	-	-	-	-	-	-	-	-	-	-	-	-	**109**
TR 08684 [2R]	-	-	100	114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
TR 08732 [2R]	-	-	97	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**100**
Tradition [6R]	-	-	-	-	80	92	-	-	104	106	100	96	101	105	104	92	82	-	-	**97**

HULLESS BARLEY (Check: 2007 - 2011 AC Metcalfe; 1998 - 2006 Harrington)

VARIETY	*2011a*	*2011b*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	Average
CDC Carter [2R]	79	104	97	85	85	99	-	-	-	-	-	-	-	-	-	-	-	-	-	**92**
CDC McGwire [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110	79	-	79	-	**89**
Falcon [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	90	-	36	-	**76**
HB 805 [2R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91	-	**91**
Millhouse [2R]	-	-	-	-	-	-	-	-	69	82	94	73	-	-	-	-	-	-	-	**80**
Peregrine [6R]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	-	**55**
Tyto [6R]	-	-	-	-	-	-	-	-	-	-	77	56	-	-	127	80	-	-	-	**85**

SPRING TRITICALE (Check: 2000-2011 Pronghorn; 1997-1999 Wapiti)

VARIETY	*2011a*	*2011b*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
AC Alta	-	-	-	-	-	-	-	-	86	97	-	-	103	109	109	91	-	-	-	**99**
AC Certa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	91	-	-	-	**113**
AC Ultima	96	99	113	101	103	112	95	100	89	99	97	105	100	105	119	91	-	123	-	**103**
Bunker	-	-	-	-	117	116	76	95	87	90	78	100	-	-	-	-	-	-	-	**95**
Bumper	84	92	122	104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**101**
Companion	-	-	-	-	-	-	-	-	88	85	100	108	97	106	104	71	-	-	-	**95**
Pronghorn	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	100	-	**100**
Sandro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	127	-	**127**
Tyndal	-	-	-	-	109	112	94	113	88	94	92	121	-	-	-	-	-	-	-	**103**
T 196	-	-	-	-	93	108	-	-	-	-	-	-	-	-	-	-	-	-	-	**101**
T 198 (Taza)	94	92	124	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**102**
T 200	101	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**104**
T 204	79	92	110	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**93**

OATS (Check: 2010-2011 Dancer, prior to 2010 Cascade)																			
VARIETY	***2011a***	***2011b***	***2010a***	***2010b***	***2009a***	***2009b***	***2008a***	***2008b***	***2007a***	***2007b***	***2006a***	***2006b***	***2005a***	***2005b***	***2004a***	***2004b***	***2002***	***2001a***	***2001b***	***Average***
AC Assiniboia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	-	**88**
AC Gwen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	53	-	**65**
AC Juniper	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101	-	**101**
AC Kaufmann	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	92	-	**94**
AC Morgan	148	111	117	101	-	112	107	99	122	110	114	79	-	-	122	-	94	111	-	**111**
AC Mustang	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	116	-	**116**
AC Pinnacle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87	90	-	**89**
AC Rebel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	96	-	**96**
AC Ronald	-	-	-	-	-	-	-	-	-	-	106	90	-	-	99	-	88	95	-	**96**
Bradley	110	95	120	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**110**
Canmore	-	-	-	-	-	-	-	-	-	-	93	139	-	-	-	-	-	-	-	**116**
Cascade	-	-	-	-	-	100	100	100	100	100	100	100	-	100	100	-	100	100	-	**100**
CDC Baler	-	-	-	-	-	-	-	-	-	-	129	78	-	90	85	-	91	-	-	**95**
CDC Big Brown	120	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**111**
CDC Boyer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	91	-	**93**
CDC Dancer	100	100	100	100	-	94	96	95	108	97	112	89	-	-	-	-	92	98	-	**99**
CDC Minstrel	108	104	112	100	-	105	103	95	-	-	-	-	-	-	-	-	-	-	-	**104**
CDC Orrin	-	-	-	-	-	113	-	-	-	-	113	119	-	-	97	-	97	-	-	**108**
CDC ProFi	-	-	-	-	-	106	100	89	-	-	-	-	-	-	-	-	-	-	-	**98**
CDC SeaBiscuit	129	88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**109**
CDC Sol-Fi	-	-	-	-	-	-	-	-	90	75	109	76	-	98	-	-	-	-	-	**90**
CDC Weaver	-	-	-	-	-	104	-	-	110	100	118	104	-	100	-	-	-	-	-	**106**
Derby	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101	-	**101**
Furlong	-	-	-	-	-	-	-	-	-	-	104	97	-	102	119	-	-	-	-	**106**
HiFi	-	-	-	-	-	-	-	-	103	92	107	87	-	-	-	-	-	-	-	**97**
Jordan	-	-	-	-	-	-	104	110	120	105	112	122	-	-	-	-	-	-	-	**112**
Leggett	-	-	-	-	-	-	-	-	112	95	109	91	-	93	116	-	-	-	-	**103**
Lu	-	-	-	-	-	-	-	-	-	-	-	-	-	93	90	-	99	109	-	**98**
Murphy	-	-	-	-	-	-	93	95	101	76	120	94	-	103	111	-	-	-	-	**99**
OA 1176-1	-	-	-	-	-	108	-	-	-	-	-	-	-	-	-	-	-	-	-	**108**
OT3018	-	-	-	-	-	-	-	-	111	107	-	-	-	-	-	-	-	-	-	**109**
OT2040	-	-	-	-	-	-	-	-	92	92	-	-	-	-	-	-	-	-	-	**92**
OT2069	115	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**106**
7600M	-	-	-	-	-	-	-	-	93	85	-	-	-	-	-	-	-	-	-	**89**
	-	-																		
VARIETY	***2011a***	***2011b***	***2010a***	***2010b***	***2009a***	***2009b***	***2008a***	***2008b***	***2007a***	***2007b***	***2006a***	***2006b***	***2005a***	***2005b***	***2004a***	***2004b***	***2002***	***2001a***	***2001b***	***Average***
OT566	-	-	-	-	-	-	-	-	-	-	100	100	-	97	-	-	-	-	-	**99**
OT576	-	-	-	-	-	-	109	100	120	100	133	126	-	-	-	-	-	-	-	**115**
OT3039	-	-	111	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**114**
OT 3037	-	-	107	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**108**
OT3044	-	-	104	114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**109**
SW Betania	-	-	-	-	-	-	93	96	103	100	107	120	-	101	-	-	-	-	-	**103**
SW Exactor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	77	-	**80**
SW Triactor	-	-	102	105	-	128	102	111	116	111	-	-	-	-	-	-	-	-	-	**111**

HARD RED SPRING WHEAT (Check: 1999 - 2011 AC Barrie; 1997/98 Katepwa)

VARIETY	*2011a*	*2011c*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
5500HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	163	136	110	130	99	**128**
5600HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	110	113	**118**
5601 HR	-	-	-	-	-	-	-	-	-	-	-	-	92	100	111	110	126	-	-	**108**
5602 HR	-	-	-	-	-	-	80	100	99	109	94	104	111	112	122	124	-	-	-	**106**
5603 HR	-	-	-	108	107	111	-	-	-	-	-	-	-	-	-	-	-	-	-	**109**
5604 HR	96	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**88**
AC Abbey	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	97	92	**110**
AC Barrie	100	100	-	100	100	100	100	100	-	-	100	100	100	100	100	100	100	100	100	**100**
AC Cadillac	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105	88	**97**
AC Elsa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	123	112	98	**111**
AC Intrepid	109	95	-	111	117	102	91	98	-	-	-	-	-	-	-	-	105	95	116	**104**
AC Majestic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89	96	**93**
AC Somerset	-	-	-	-	-	-	78	99	89	89	90	92	-	-	-	-	-	-	-	**90**
VARIETY	*2011a*	*2011c*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	Average
AC Splendor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	157	118	104	94	109	**116**
AC Superb	-	-	-	122	119	116	103	122	91	113	110	102	105	123	134	122	152	98	125	**116**
Alikat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	108	95	**108**
Alsen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	131	-	-	**131**
Alvena (PT213)	-	-	-	93	-	-	85	104	98	98	99	108	-	-	-	-	-	-	-	**98**
BW 357	-	-	-	-	-	-	-	-	108	109	-	-	-	-	-	-	-	-	-	**109**
BW 365	-	-	-	-	-	-	94	103	-	-	-	-	-	-	-	-	-	-	-	**99**
BW 388	-	-	-	-	-	-	99	109	-	-	-	-	-	-	-	-	-	-	-	**104**
BW 394	-	-	-	-	111	100	-	-	-	-	-	-	-	-	-	-	-	-	-	**106**
BW 415	-	-	-	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**103**
BW 433	105	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**101**
BW 755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	117	**101**
BW 824	-	-	-	-	-	-	-	-	103	110	104	112	-	-	-	-	-	-	-	**107**
BW 841	-	-	-	-	-	-	-	-	106	98	-	-	-	-	-	-	-	-	-	**102**
BW 859	-	-	-	-	113	105	95	118	-	-	-	-	-	-	-	-	-	-	-	**108**
BW 867	-	-	-	-	-	-	92	114	-	-	-	-	-	-	-	-	-	-	-	**103**
BW 874	-	-	-	-	116	110	-	-	-	-	-	-	-	-	-	-	-	-	-	**113**
BW 875	-	-	-	-	126	110	-	-	-	-	-	-	-	-	-	-	-	-	-	**118**
BW 878	-	-	-	104	116	95	-	-	-	-	-	-	-	-	-	-	-	-	-	**105**
BW 880 (CDC Stanley)	134	105	-	114	118	93	-	-	-	-	-	-	-	-	-	-	-	-	-	**113**
BW 881 (CDC Kernen)	109	94	-	97	123	100	-	-	-	-	-	-	-	-	-	-	-	-	-	**105**
BW 883 (CDC Utmost)	113	114	-	118	125	116	-	-	-	-	-	-	-	-	-	-	-	-	-	**117**
BW 901	94	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**87**
Carberry	110	111	-	109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**110**
CDC Abound	-	-	-	122	124	115	91	108	-	-	-	-	-	-	-	-	-	-	-	**112**
CDC Alsask	-	-	-	-	119	106	90	105	97	100	94	96	79	96	118	122	-	-	-	**102**
CDC Bounty	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	123	97	103	**108**
CDC Go	115	104	-	106	108	104	-	-	-	-	103	110	92	107	152	130	-	-	-	**112**
CDC Imagine	-	-	-	-	-	-	-	-	-	-	-	-	103	111	136	121	110	103	106	**113**
CDC Osler	-	-	-	-	-	-	-	-	-	-	91	98	100	111	156	111	-	-	-	**111**
Fieldstar VB	-	-	-	106	115	107	-	-	-	-	-	-	-	-	-	-	-	-	-	**109**
Glenn	106	86	-	106	121	109	-	-	-	-	-	-	-	-	-	-	-	-	-	**106**
Goodeve	107	99	-	-	116	95	78	104	-	-	-	-	-	-	-	-	-	-	-	**100**
Goodeve VB	-	-	-	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**90**

VARIETY	*2011a*	*2011c*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	Average
Harvest	-	-	-	113	117	109	89	115	-	-	97	108	-	-	122	104	109	90	106	**107**
Helios (PT211)	-	-	-	-	-	-	-	-	-	-	-	-	103	114	-	-	-	-	-	**109**
Infinity	-	-	-	-	-	-	-	-	95	88	99	106	100	111	135	131	-	-	-	**108**
Journey	-	-	-	-	-	-	-	-	-	-	-	-	118	112	136	127	140	70	-	**117**
Kane	-	-	-	-	99	108	87	113	79	100	-	-	-	-	-	-	-	-	-	**98**
Katepw a	92	87	-	103	118	101	75	105	72	91	100	96	79	105	127	107	110	91	89	**97**
Lillian	-	-	-	-	109	106	95	97	-	-	-	-	92	109	178	92	-	-	-	**110**
Lovitt	-	-	-	-	-	-	-	-	-	-	-	-	89	93	123	96	116	-	-	**103**
McKenzie	-	-	-	-	-	-	-	-	-	-	-	-	-	-	147	129	-	105	110	**123**
Minnedosa	-	-	-	-	107	104	-	-	-	-	-	-	-	-	-	-	-	-	-	**106**
Muchmore	97	100	-	113		-	-	-	-	-	-	-	-	-	-	-	-	-	-	**103**
Park	-	-	-	-	-	-	-	-	-	-	96	96	108	98	143	115	-	-	-	**109**
Peace	-	-	-	-	-	-	-	-	97	100	85	82	84	96	-	-	-	-	-	**91**
Prodigy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	145	103	112	**120**
PT 551	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	102	**94**
PT 575 (CDC Thrive)	102	84	-	114	129	99	-	-	-	-	-	-	-	-	-	-	-	-	-	**106**
Shaw	115	97	-	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**109**
Snow star	-	-	-	-	-	-	85	100	-	-	-	-	-	-	-	-	-	-	-	**93**
Stettler	116	93	-	119	113	108	-	-	-	-	-	-	-	-	-	-	-	-	-	**110**
Unity	-	-	-	-	129	102	90	104	-	-	-	-	-	-	-	-	-	-	-	**106**
Unity VB	112	116	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**113**
Vesper	116	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**112**
Waskada	-	-	-	102	118	103	94	112	-	-	-	-	-	-	-	-	-	-	-	**106**
WR859 CL	96	101	-	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**104**
Hard White Spring Varieties																				
VARIETY	*2011a*	*2011c*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
BW315A	-	-	-	-	-	-	-	-	74	95	94	104	-	-	-	-	-	-	-	**92**
Kanata	-	-	-	-	-	-	-	-	-	-	97	67	-	-	-	-	119	72	85	**88**
Snow bird	100	-	-	99	108	105	94	105	-	-	97	100	-	-	-	-	112	95	105	**101.81818**

CANADIAN PRAIRIE SPRING WHEAT (Check: AC Taber)

VARIETY	*2011a*	*2011c*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
AC Conquer VB	122	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**123**
AC Crystal	92	107	-	117	92	111	114	110	-	-	122	107	-	-	-	-	91	112	91	**106**
5700PR	-	-	-	-	112	103	135	108	-	-	-	-	-	-	95	100	104	106	84	**105**
5701PR	-	-	-	-	-	-	-	-	-	-	-	-	125	113	119	107	91	-	-	**111**
5702PR	-	-	-	-	102	103	140	101	-	-	-	-	-	-	-	-	-	-	-	**112**
AC Foremost	98	114	-	118	114	96	126	104	-	-	-	-	-	-	-	-	-	-	-	**110**
AC Taber	100	100	-	100	100	100	100	100	-	100	100	100	100	100	100	100	100	100	100	**100**
AC Vista	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	85	**94**
AC2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	112	92	**102**
GP 010	-	-	-	-	103	98	-	-	-	-	-	-	-	-	-	-	-	-	-	**101**
HW 024	76	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**80**
HY 682	-	-	-	124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**124**
HY 977	-	-	-	-	-	-	-	-	-	102	-	-	-	-	-	-	-	-	-	**102**
HY 985	104	124	-	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**113**
Snow hite 475	-	-	-	-	-	-	-	-	-	104	105	80	126	111	92	105	-	-	-	**103**
Snow hite 476	-	-	-	-	-	-	-	-	-	-	102	97	112	113	115	100	-	-	-	**107**

CANADIAN WHEAT SOFT WHITE SPRING (Check: AC Taber)

VARIETY	*2011a*	*2011c*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
AC Andrew	124	145	-	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	**110**
AC Meena	-	-	-	-	-	-	96	95	-	-	-	-	-	-	-	-	-	-	-	**96**
AC Sadash	-	-	-	99	110	96	103	112	-	-	-	-	-	-	-	-	-	-	-	**104**

GENERAL PURPOSE WHEAT (Check: AC Taber)

VARIETY	*2011a*	*2011c*	*2010a*	*2010b*	*2009a*	*2009b*	*2008a*	*2008b*	*2007a*	*2007b*	*2006a*	*2006b*	*2005a*	*2005b*	*2004a*	*2004b*	*2002*	*2001a*	*2001b*	*Average*
CDC NRG 003	98	132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**115**
CDC NRG 010	118	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**126**
GP 003	-	-	-	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**122**
GP 010	-	-	-	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**115**
Minnedosa (CWGP)	104	126	-	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**115**

REGIONAL VARIETY TRIAL AREA MAP

SPRING WHEAT

Variety	Overall Yield	Overall Station Years of Testing	Yield Category [1] (% AC Barrie)			Agronomic Characteristics							Disease Resistance [5]				
			Low < 45 (bu/ac)	Medium 45 - 70 (bu/ac)	High > 70 (bu/ac)	Maturity Rating [3]	Protein (%)	Test Weight (lb/bu)	TSW [4] (g)	Height (cm)	Resistance to: [5] Lodging	Resistance to: [5] Sprouting	Loose Smut	Bunt	Stripe Rust	Leaf Spot	Fusarium Head Blight
CANADA WESTERN RED SPRING																	
AC Barrie (bu/ac)	**59**		**36**	**55**	**79**												
AC Barrie [2] ❀	**100**	**(357)**	**100**	**100**	**100**	**M**	**13.3**	**62**	**37**	**88**	**G**	**G**	**G**	**F**	**VP**	**P**	**F**
5602HR ❀	105+	(80)	101	104	109+	M	0.5	63	37	91	G	F	VG	G	F	F	G
5603HR ❀	105+	(50)	103	107+	104+	L	-0.3	63	34	87	G	VG	G	G	P	F	F
5604HR CL ❀	100	(49)	106	99	99	M	-0.1	63	33	87	G	G	VG	VG	XX	P	G
AC Cadillac ❀	96-	(103)	96-	96-	96-	M	0.2	64	39	98	F	F	VG	VG	G	F	F
AC Eatonia ❀	94-	(78)	87-	97	92-	M	-0.1	62	35	92	P	G	F	G	F	P	XX
AC Elsa ❀	103+	(110)	99	105	104	M	-0.4	62	35	89	G	F	G	F	F	G	P
AC Intrepid ❀	102	(107)	98	103	105+	E	-0.5	62	39	90	G	P	F	G	G	F	P
AC Splendor	95-	(151)	92-	95-	98	VE	0.4	61	37	89	F	F	F	F	F	F	P
Alikat	96-	(70)	95-	95-	98	E	-0.4	63	36	87	F	F	G	XX	VP	P	F
Alvena ❀	101	(68)	100	101	103	E	0.4	63	37	90	G	P	G	G	F	XX	P
Carberry ❀	107+	(49)	117+	104	105	L	0.2	63	38	79	VG	F	G	G	G	P	G
CDC Abound ❀ CL	110+	(84)	108+	109+	112+	M	0.1	63	40	82	G	F	F	F	P	P	P
CDC Alsask ❀	107+	(102)	105+	107+	109+	M	0.1	62	36	92	F	G	G	G	F	P	P
CDC Bounty	104+	(65)	101	106+	103	M	-0.4	64	37	94	F	F	G	F	G	P	F
CDC Go	111+	(88)	103	111+	117+	M	0.2	61	42	83	G	VP	P	G	G	P	P
CDC Imagine ❀ CL	104+	(76)	102	104	109+	M	-0.2	61	37	83	G	F	G	G	F	P	VP
CDC Kernen ▲	108+	(49)	111	103	110+	M	0.4	63	38	92	G	F	VG	F	F	F	F
CDC Osler	106+	(70)	103	106	109+	E	0.0	61	35	85	G	F	G	G	F	F	VP
CDC Stanley ▲	114+	(49)	116+	112+	113+	M	-0.1	63	33	85	G	G	G	VP	XX	F	P
CDC Teal	100	(86)	94-	102	101	E	-0.2	62	36	90	G	P	F	F	G	P	VP
CDC Thrive ▲ CL	109+	(49)	110	107	110+	E	0.3	63	36	88	G	P	G	F	F	F	P
CDC Utmost VB ▲	113+	(49)	116+	112+	111+	M	0.3	62	35	85	G	G	P	VP	F	F	P
Fieldstar VB ❀	102	(50)	102	102	102	M	-0.3	63	33	88	F	VG	F	G	P	XX	F
Glenn ❀	104	(49)	112+	100	104	L	0.4	65	37	85	VG	F	F	F	G	F	F
Goodeve VB ❀	106+	(84)	109+	104	104	M	0.3	62	37	88	VG	G	G	P	F	P	VP
Harvest ❀	102	(114)	98	103	104	M	0.1	62	37	83	VG	VG	G	F	G	P	VP
Infinity ❀	104+	(70)	104	104+	106	M	-0.3	62	33	89	G	G	G	F	P	P	VP
Journey	99	(69)	95	101	99	M	0.6	62	36	83	VG	G	F	G	F	P	P
Kane ❀	99	(51)	95-	98	102	M	0.1	64	36	85	G	VG	P	F	F	F	F
Katepwa	98	(301)	98	99	98	M	-0.1	62	35	93	F	F	G	G	P	P	F
Lillian ❀	105+	(83)	111+	100	104	M	-0.1	61	37	86	G	G	F	G	VG	P	VP
Lovitt ❀	97	(37)	96	95-	105	M	-0.3	62	35	89	G	VG	G	F	P	XX	VP
McKenzie	103+	(104)	101	104	105+	M	-0.9	62	34	90	F	VG	P	VG	P	F	F
Muchmore ❀	111+	(49)	121+	106	110	L	0	63	37	74	VG	G	G	G	G	P	P
Park	97	(45)	91-	98	102	VE	0.0	62	35	92	F	G	G	XX	P	P	VP
Peace	100	(53)	100	97	103	M	0.2	63	37	92	G	P	VG	VG	G	XX	VP
Prodigy †	104+	(84)	102	104	103	M	0.3	63	35	94	G	F	F	G	F	P	VP
Roblin	95-	(82)	91-	97	95-	VE	0.1	62	36	87	G	F	G	VP	F	VP	VP
Shaw VB ❀	113+	(49)	117+	109+	113+	M	0.2	63	37	92	G	G	P	G	XX	P	P
Somerset ❀	100	(50)	102	99	100	M	-0.2	62	36	97	G	F	VG	F	F	P	P
Stettler ❀	112+	(67)	120+	109+	111+	M	0.4	63	37	84	G	G	G	G	G	P	P
Superb ❀	112+	(177)	110+	111+	115+	L	-0.2	62	42	85	G	F	F	G	VP	P	P
Unity VB ❀	111+	(67)	112+	110+	111+	M	-0.4	64	36	90	G	G	P	VG	P	P	P
Vesper VB ▲	107+	(33)	108	109	105	M	-0.4	63	38	90	VG	F	F	P	VP	G	G
Waskada ❀	100	(67)	101	98	102	M	0.1	64	37	92	G	VG	G	G	P	P	G
WR859 CL ❀	107+	(67)	111+	104	107+	M	0.4	63	35	81	G	G	VG	VG	F	P	G
CANADA WESTERN HARD WHITE																	
Snowbird ❀	101	(94)	99	101	101	M	-0.4	62	36	89	G	G	G	F	P	P	P
Snowstar ❀	102	(56)	99	103	102	M	-0.9	64	31	83	XX	G	P	P	P	F	P

Remarks: AC Eatonia and Lillian are adapted to sawfly areas. Alikat is adapted to acid soils. C.W. Red Spring Wheat grown under irrigation tends to have lower grades. CDC Abound, CDC Imagine, CDC Thrive and WR589 CL are tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX. Fieldstar VB, Goodeve VB, Shaw VB, CDC Utmost VB and Vesper VB are CWRS wheat midge tolerant varieties. They contain the same "*Sm 1*" gene for tolerance. Glenn is a semi-dwarf variety. BW433, BW901 and HW024- insufficient data to describe. 5603HR - 2011 yield data was not included into the table due to poor seed. Varieties added to the table: Vesper VB. ❀ - Plant Breeder's Rights. ▲ - Plant Breeder's Rights applied for. † - Flagged for removal. XX - insufficient data to describe.

[1] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for AC Barrie are reported in the Overall and Low, Medium, and High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results. [2] Yields are reported relative to AC Barrie. Varieties that are statistically higher (+) or lower (-) yielding than AC Barrie are indicated. No symbol after the yield figure indicates that there is no statistical difference. [3] Maturities rated as: VE = Very Early; E = Early; M = Medium; L = Late and VL = Very Late. Long term average days t maturity for AC Barrie is 106 days and rated as Medium maturing (M). [4] Thousand Seed Weight. [5] Resistance Ratings: VG = Very Good; G = Good; F = Fair; P = Poor and VP = Very Poor. Varieties having a rating of Fair (F) or Poor (P) to loose smut or bunt should be treated with a systemic seed treatment to reduce the potential

SPRING WHEAT

Variety	Overall Yield	Overall Station Years of Testing	Yield Category [1] (% AC Taber)			Agronomic Characteristics							Disease Resistance [5]				
			Low < 45 (bu/ac)	Medium 45 - 90 (bu/ac)	High > 90 (bu/ac)	Maturity Rating [3]	Protein (%)	Test Weight (lb/bu)	TSW [4] (g)	Height (cm)	Resistance to: [5] Lodging	Resistance to: [5] Sprouting	Loose Smut	Bunt	Stripe Rust	Leaf Spot	Fusarium Head Blight
CANADA PRAIRIE SPRING - RED																	
AC Taber (bu/ac)	**71**		**37**	**68**	**109**												
AC Taber [2]	**100**	**(297)**	**100**	**100**	**100**	**L**	12.3	62	42	79	**G**	**P**	**P**	**VG**	**VP**	**F**	**VP**
5700PR ❀	102+	(117)	105	101	103+	M	0.4	62	42	75	VG	F	P	G	P	P	VP
5701PR ❀	101	(91)	101	101	94-	M	0.4	60	43	77	G	P	F	F	G	P	VP
5702PR ❀	101	(52)	113	99	98	M	0.4	61	40	79	G	P	P	F	P	F	P
AC Crystal ❀	99	(230)	97-	98-	102	L	0.3	62	43	79	G	P	F	VG	VP	F	VP
AC Foremost	98-	(124)	99	97-	100	M	XX	62	43	73	VG	F	F	VG	VP	P	VP
Conquer VB ❀	133+	(29)	XX	140+	106	M	XX	63	42	84	G	P	P	G	VG	F	P
SY985 ▲	126+	(29)	XX	131+	94	M	XX	62	44	79	G	F	VG	G	XX	F	F
CANADA WESTERN GENERAL PURPOSE																	
CDC NRG003 ▲	135+	(29)	XX	142+	106	M	XX	61	43	81	G	F	G	VG	XX	VP	VP
Minnedosa ❀	120+	(45)	121	124+	102	M	XX	62	42	83	G	G	F	G	G	P	P
NRG010 ❀	129+	(43)	XX	133+	106	L	XX	62	41	83	G	P	VG	VG	VG	P	VP

Remarks: Caution should be taken interpreting the data because AC Taber performed poorly in 2011 causing yield values for some new varieties to be unexpectedly hig CPS varieties are more susceptible to take-all root rot than other wheat classes. AC Taber yields about 20% higher than AC Barrie. AC Crystal, 5700PR, 5701PR, and 5702PR have improved quality compared to AC Foremost and AC Taber. 5700PR is grown under contract. Conquer VB is the only CPS-red midge tolerant variety using the "*Sm 1*" gene. Varieties in the General Purpose market class are intended for ethanol and livestock feed purposes. ❀ - Plant Breeder's Rights. ▲ - Plant Breeder's Rights applied for. XX - insufficient data to report. New varieties: Conquer VB (HY682); NRG010 (GP010), CDC NRG003 (GP003) and SY985 (HY985).

[1] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for AC Taber are reported in the Overall and Low, Medium and High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results. [2] Yields are reported relative to AC Taber. Varieties that are statistically higher (+) or lower (-) yielding than AC Taber are indicated. No symbol after the yield figure indicates that there is no statistical difference. [3] Maturities rated as: VE = Very Early; E = Early; M = Medium; L = Late and VL = Very Late. Long term average days to maturity for AC Taber is 108 days and rated as Late maturing (L). [4] Thousand Seed Weight. [5] Resistance Ratings: VG - Very Good; G - Good; F - Fair; P - Poor and VP - Very Poor. Varieties having a rating of Fair (F) or Poor (P) to loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for plant infection.

SPRING WHEAT

Variety	Overall Yield	Overall Station Years of Testing	Yield Category [1] (% Strongfield) Low < 45 (bu/ac)	Medium 45 - 75 (bu/ac)	High > 75 (bu/ac)	Agronomic Characteristics Maturity Rating [3]	Test Weight (lb/bu)	TSW [4] (g)	Height (cm)	Resistance to: [5] Lodging	Shattering	Sprouting	Disease Resistance [5] Loose Smut	Bunt	Stripe Rust	Leaf Spot	Fusarium Head Blight
CANADA WESTERN AMBER DURUM																	
Strongfield (bu/ac)	**64**		**35**	**61**	**95**												
Strongfield [2] ❀	**100**	**(94)**	**100**	**100**	**100**	**M**	63	45	85	**F**	**VG**	**F**	**VP**	**G**	**G**	**P**	**VP**
AC Avonlea ❀	98	(60)	103	92-	100	M	63	44	90	F	G	F	VP	VG	F	P	P
AC Morse ❀	91-	(67)	95-	89-	93-	E	61	44	84	F	G	F	VP	VG	G	VP	VP
AC Navigator ❀	95-	(65)	102	93-	92-	M	63	45	77	G	G	G	VP	VG	VG	VP	VP
Brigade ❀	104+	(45)	101	105+	103	L	64	48	88	G	XX	F	P	G	G	F	P
CDC Verona ❀	102	(35)	99	105+	99	M	63	47	81	G	XX	F	P	G	VG	P	P
Commander ❀ †	103	(39)	XX	105	100	M	62	45	78	VG	VG	F	F	VG	F	P	VP
Enterprise ▲	102	(35)	102	101	103	M	64	45	82	G	XX	F	P	G	VG	G	P
Eurostar ❀	102	(45)	103	103	100	L	64	47	88	G	XX	F	P	VG	VG	F	P
Kyle	88-	(123)	90-	89-	85-	M	62	44	99	P	G	F	VP	VG	VG	P	P
Transcend ▲	100	(24)	97	101	101	M	63	50	89	F	XX	F	VP	VG	VG	F	P

Remarks: Generally durum wheat should only be grown in south and south-eastern portion of Alberta due to late maturity. Outside these areas, durum is late maturing and subject to quality loss. All durum varieties are susceptible to two new races of loose smut and are generally more susceptible than CWRS varieties to Fusarium Head Blight. Strongfield yields about 10% higher than AC Barrie in areas of best adaptation. AC Navigator, Brigade, Commander and Eurostar have stronger gluten and grown under New varieties: Transcend (DT801). ❀ - Plant Breeder's Rights. ▲ - Plant Breeder's Rights applied for. † - Flagged for removal. XX - insufficient data to describe.

[1] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for Strongfield are reported in the Overall and Low, Medium and High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results.

[2] Yields are reported relative to Strongfield. Varieties that are statistically higher (+) or lower (-) yielding than Strongfield are indicated. No symbol after the yield figure indicates that there is no statistical difference. [3] Maturities rated as: VE - Very Early; E - Early; M - Medium; L - Late and VL - Very Late. Long term average days to maturity for Strongfield is 105 days and rated as Medium maturing (M). [4] Thousand Seed Weight. [5] Resistance Ratings: VG - Very Good; G - Good; F - Fair; P - Poor and VP - Very Poor. Varieties having a rating of Fair (F) or Poor (P) to loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for plant infection.

SPRING WHEAT

Variety	Overall Yield	Overall Station Years of Testing	Yield Category [1] (% Amazon) Low < 50 (bu/ac)	Medium 50 - 90 (bu/ac)	High > 90 (bu/ac)	Agronomic Characteristics Maturity Rating [3]	Test Weight (lb/bu)	TSW [4] (g)	Height (cm)	Resistance to: [5] Lodging	Shattering	Sprouting	Disease Resistance [5] Loose Smut	Bunt	Stripe Rust	Leaf Spot	Fusarium Head Blight
CANADA WESTERN EXTRA STRONG																	
Amazon (bu/ac)	**58**		**38**	**64**	**86**												
Amazon [2] ❀ †	**100**	**(154)**	**100**	**100**	**100**	**L**	**61**	**46**	**97**	**G**	**G**	**P**	**VG**	**F**	**F**	**F**	**P**
Bluesky †	99	(59)	97	99	103	E	61	44	96	F	G	P	XX	XX	P	P	P
CDC Rama †	108 +	(60)	107+	107+	XX	L	63	48	97	F	G	G	VG	G	G	P	F
Laser †	97	(59)	90 -	98	103	E	61	39	88	VG	G	F	VG	VP	XX	P	VP

Remarks: Extra strong spring varieties have limited market potential. ❀ - Plant Breeder's Rights. XX - insufficient data to describe. † - Flagged for removal.

[1] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for Amazon are reported in the Overall and Low, Medium and High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results.

[2] Yields are reported relative to Amazon. Varieties that are statistically higher (+) or lower (-) yielding than Amazon are indicated. No symbol after the yield figure indicates that there is no statistical difference. [3] Maturity rated as: VE = Very Early; E = Early; M = Medium; L = Late and VL = Very Late. Long term average days to maturity for Amazon is 110 days and rated as Medium maturing (M). [4] Thousand Seed Weight. [5] Resistance Ratings: VG - Very Good; G - Good; F - Fair; P - Poor and VP - Very Poor. Varieties having a rating of Fair (F) or Poor (P) to loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for plant infection.

SPRING WHEAT

Variety	Overall Yield	Overall Station Years of Testing	Andrew) Low < 55 (bu/ac)	Medium 55 - 85 (bu/ac)	High > 85 (bu/ac)	Agronomic Characteristics: Maturity Rating [3]	Protein (%)	Test Weight (lb/bu)	TSW [4] (g)	Height (cm)	Resistance to: [5] Lodging	Shattering	Sprouting	Disease Resistance [5]: Loose Smut	Bunt	Stripe Rust	Leaf Spot	Fusarium Head Blight
SOFT WHITE SPRING WHEAT																		
AC Andrew (bu/ac)	**83**		**44**	**74**	**115**													
AC Andrew [2]	**100**	**(117)**	**100**	**100**	**100**	**L**	**11.5**	62	38	79	**VG**	**VG**	**P**	**VP**	**P**	**F**	**G**	**VP**
AC Meena	97 -	(51)	101	97-	95	L	-0.6	61	37	80	G	G	F	VP	VP	G	F	P
Bhishaj	100	(24)	XX	99	103	L	XX	62	37	85	VG	VG	F	G	VP	G	F	VP
Sadash ❀	110 +	(51)	113+	109+	109+	L	-0.4	63	39	82	VG	VG	P	VP	VP	VG	F	P

Remarks: All soft white spring wheat varieties have a semi-dwarf stature. AC Andrew yields about 35% more than AC Barrie. SWS varieties may have potential demand as a feedstock in the production of ethanol. Soft white spring wheat is susceptible to pre-harvest sprouting. ❀ - Plant Breeder's Rights. XX - insufficient data to describe.

[1] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for AC Andrew are reported in the Overall and Low, Medium and High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results. [2] Yields are reported relative to AC Andrew. Varieties that are statistically higher (+) or lower (-) yielding than AC Andrew are indicated. No symbol after the yield figure indicates that there is n statistical difference. [3] Maturities rated as: VE = Very Early; E = Early; M = Medium; L = Late and VL = Very Late. Long term average days to maturity for AC Andrew is 110 days and rated as Late maturing (L). [4] Thousand Seed Weight. [5] Resistance Ratings: VG = Very Good; G = Good; F = Fair; P = Poor and VP = Very Poor. Varieties having a rating of Fair (F) or Poor (P) to loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for plant infection.

MALTING BARLEY

Variety	2 or 6 row	Awn Type [1]	Overall Yield	Overall Station Years of Testing	Yield Category [2] (% AC Metcalfe)				Agronomic Characteristics					Disease Resistance [5]						
					Low < 60 (bu/ac)	Medium 60 - 90 (bu/ac)	High 90 - 120 (bu/ac)	V. High > 120 (bu/ac)	Maturity Rating [4]	Test Weight (lb/bu)	TSW (g)	Height (cm)	Resistance to Lodging [5]	Loose Smut	Other Smuts	Root Rot	Scald	Spot Form Blotch	Net Form Blotch	Fusarium Head Blight
MALTING ACCEPTANCE: RECOMMENDED																				
AC Metcalfe (bu/ac)			**100**		**48**	**79**	**104**	**133**												
AC Metcalfe [3] ❀	**2**	**R**	**100**	**(423)**	**100**	**100**	**100**	**100**	**M**	**52**	**47**	**82**	**F**	**VG**	**F**	**F**	**VP**	**F**	**VP**	**F**
CDC Copeland ❀	2	R	104+	(137)	93	101	108+	109+	M	51	47	81	F	P	F	F	VP	F	F	F
CDC Meredith ❀	2	R	108+	(61)	102	109+	108+	108+	L	51	46	75	F	VG	G	G	VP	VG	VP	F
Legacy ❀	6	SS	102	(122)	91-	99	103	111+	M	49	40	82	G	F	G	G	VP	G	VP	P
Newdale ❀	2	R	103+	(90)	102	102	104	104+	M	52	46	72	F	VP	G	G	P	G	F	F
Stellar-ND ❀	6	SS	94-	(73)	XX	88-	94-	103	E	49	41	79	G	G	G	F	P	F	P	F
Tradition ❀	6	SS	101	(121)	88-	99	102	110+	E	50	40	81	G	VP	G	G	VP	F	VP	VP
MALTING ACCEPTANCE: UNDER TEST																				
Bentley ❀	2	R	105+	(61)	109	102	104+	105+	M	52	47	81	G	P	G	G	VP	VG	P	P
CDC Clyde ❀	6	SS	103	(77)	93	104	101	108+	VE	49	40	76	G	F	VG	G	P	G	F	VP
CDC Kamsack ❀	6	R	97	(37)	XX	90-	99	109	M	48	41	69	G	F	G	F	P	F	VP	VP
CDC Kindersley ❀	2	R	102	(31)	XX	102	99	103	E	XX	XX	79	G	VP	VG	F	VP	G	P	F
CDC Mayfair ❀	6	R	97	(52)	XX	91-	96	104	E	48	40	75	G	VP	G	F	VP	G	P	P
CDC Reserve ❀	2	R	102	(61)	112	101	99	102	M	53	44	78	F	VP	P	F	P	P	VP	P
Celebration	6	SS	94	(27)	XX	87-	99	XX	M	50	40	79	G	VG	VG	P	VP	G	VP	P
Cerveza ▲	2	R	109+	(45)	XX	109+	108+	110+	M	51	46	74	F	VG	VG	F	VP	G	P	F
Major ❀	2	R	106+	(45)	XX	106	107+	106+	M	51	44	74	G	VG	G	F	P	G	F	F
Merit 57 ❀	2	R	109+	(83)	108	108+	109+	109+	VL	51	44	79	F	P	VP	F	P	G	P	G
Norman ❀	2	R	97-	(47)	XX	94-	97	98	M	52	43	75	G	VP	VP	P	VP	VG	P	G
MALTING ACCEPTANCE: OTHER																				
CDC Battleford ❀ †	6	S	105+	(107)	94	101	104	117+	M	49	41	84	G	P	G	G	P	VG	P	VP
CDC ExPlus ❀	2	R	87-	(30)	XX	89-	88-	XX	M	60	44	82	VG	P	P	VP	VP	F	F	G
CDC Kendall ❀	2	R	98-	(165)	100	98	97-	96-	E	52	45	78	F	P	P	G	VP	G	F	F
CDC Yorkton †	6	S	106+	(96)	XX	106	105+	111+	M	47	39	81	G	P	G	G	P	G	F	VP
Excel † *	6	SS	102	(50)	95	106	100	102	M	50	40	75	G	P	F	G	VP	F	VP	VP
Formosa †	2	R	97	(36)	XX	98	95	101	M	53	48	79	XX	XX	XX	XX	VP	F	VP	XX
Harrington	2	R	93-	(284)	99	96-	92-	89-	M	50	44	78	F	P	P	F	VP	P	VP	G

Remarks: Malting Barley varieties are described as follows: Recommended: varieties with market acceptance and recommended by the Canadian Malting Barley Technical Centre (CMBTC); Under Test: varieties currently undergoing evaluation for market acceptance; and Other: not currently recommended but varieties where a market may exist.

CDC ExPlus and HB08304 are hulless malting varieties. Also CDC ExPlus is a normal starch hulless barleys suitable for food use. Two row CDC PolarStar, HB08304 and six row BT584 and CDC Anderson varieties - insufficient data to desctribe. * - Varieties have limited data compared with AC Metcalfe. ❀ - Plant Breeder's Rights. ▲ - Plant Breeder's Rights applied for. † - Flagged for removal.

[1] Awn types describe as R = rough, S = smooth and SS = semi-smooth. [2] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for AC Metcalfe are reported in the Overall and Low, Medium, High, and Very High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results. [3] Yield are reported relative to AC Metcalfe. Varieties that are statistically higher (+) or lower (-) yielding than AC Metcalfe are indicated. No symbol after the yield figure indicates that there is no statistical difference. [4] Maturities rated as: VE - Very Early; E - Early; M - Medium; L - Late and VL - Very Late. Long term average days to maturity for AC Metcalfe is 95 days and rated as Medium maturing (M). [5] Resistance Ratings: VG - Very Good; G - Good; F - Fair; P - Poor and VP - Very Poor. Varieties having a rating of Fair (F) or Poor (P) to loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for plant infection.

FEED AND FOOD BARLEY

Variety	2 or 6 row	Awn Type[1]	Overall Yield	Overall Station Years of Testing	Yield Category[2] (% AC Metcalfe)				Agronomic Characteristics					Disease Resistance[6]						
					Low < 60 (bu/ac)	Medium 60 - 90 (bu/ac)	High 90 - 120 (bu/ac)	V. High > 120 (bu/ac)	Maturity Rating[4]	Test Weight (lb/bu)	TSW[5] (g)	Height (cm)	Resistance to Lodging[6]	Loose Smut	Other Smuts	Root Rot	Scald	Spot Form Blotch	Net Form Blotch	Fusarium Head Blight
AC Metcalfe (bu/ac)			**100**		**48**	**79**	**104**	**133**												
AC Metcalfe[3] ❀	**2**	**R**	**100**	**(422)**	**100**	**100**	**100**	**100**	**M**	**52**	46	80	**F**	**VG**	**F**	**F**	**VP**	**F**	**VP**	**F**
AC Harper ❀ *	6	SS	103+	(166)	94	96-	102	111+	M	48	40	80	G	P	F	F	F	F	F	P
AC Lacombe ❀ *	6	S	107+	(194)	98	100	107+	115+	M	48	42	84	G	P	G	P	P	G	P	VP
AC Ranger *	6	S	107+	(48)	100	99	118+	108+	L	49	43	74	F	P	F	G	P	G	F	VP
AC Rosser ❀ *	6	S	110+	(166)	100	103	111+	117+	M	48	41	82	G	P	VG	G	VP	G	F	VP
Busby ❀	2	R	104+	(45)	107	103	106	103	M	53	49	78	G	VP	G	VP	F	G	P	F
CDC Austenson ❀	2	R	111+	(61)	108	111+	111+	112+	L	54	46	78	G	VP	VG	F	VP	VG	P	F
CDC Coalition ❀	2	R	109+	(53)	107	110+	108+	109+	L	53	47	74	G	VG	VG	F	VP	G	VP	F
CDC Cowboy ❀	2	R	95-	(75)	107	94-	93-	95-	L	52	55	103	F	P	G	F	P	G	F	G
CDC Dolly	2	R	101	(184)	97	100	103+	100	M	53	49	74	F	VP	F	F	F	P	VP	G
CDC Helgason ❀	2	R	104+	(101)	96	99	106+	114+	E	52	46	75	G	VG	G	F	VP	G	G	P
CDC Mindon ❀	2	R	99	(47)	XX	98	103	96-	M	52	48	77	G	VG	VG	XX	VP	G	VP	G
CDC Trey ❀	2	R	104+	(106)	98	103	103	109+	M	52	50	80	G	P	VG	G	P	VG	F	F
Champion ❀	2	R	112+	(97)	124+	111+	111+	110+	M	53	48	78	G	VP	VG	XX	VP	F	VP	F
Chigwell ❀	6	S	104	(43)	XX	98	106	111+	M	49	40	77	G	P	G	P	G	G	F	VP
Conlon ❀	2	S	94-	(63)	94	92-	93-	95-	VE	52	52	79	G	F	F	G	VP	G	F	G
Gadsby ▲	2	R	109+	(31)	XX	109+	110+	108+	M	53	52	84	F	VG	VG	F	VG	G	P	F
Manny ❀ †	6	R	110+	(77)	99	101	113+	119+	E	48	41	86	G	XX	VG	P	VG	F	P	P
Niobe ❀ †	2	R	105+	(63)	96	97	108+	113+	E	50	45	75	G	P	G	P	F	VG	P	P
Ponoka ❀	2	R	110+	(120)	98	107+	112+	112+	L	50	46	79	G	VG	VG	F	G	G	P	F
Seebe	2	R	100	(229)	91-	98	103	102	VL	52	50	86	G	VP	VG	F	G	P	VP	G
Stander ❀	6	SS	104+	(76)	XX	101	100	111+	M	51	41	84	G	P	P	F	VP	G	VP	VP
Sundre ❀	6	S	111+	(68)	97	111	109+	121+	L	51	43	85	G	P	VG	P	VG	F	P	VP
Trochu ❀	6	S	110+	(136)	99	106	110+	120+	M	49	42	79	G	P	G	G	F	G	VP	F
XENA ❀	2	R	112+	(229)	107	109+	114+	115+	M	52	49	78	G	P	P	G	VP	F	VP	G
SEMI - DWARF																				
CDC Bold	2	R	106+	(77)	111+	107+	106+	102	M	53	48	72	VG	P	G	G	VP	F	VP	VP
Mahigan ❀ * †	6	SS	101	(111)	85-	92-	102	110+	M	49	36	76	VG	VP	VG	P	G	F	F	VP
Vivar ❀	6	R	110+	(106)	101	104	110+	117+	M	49	44	73	VG	F	VG	G	F	G	VG	VP
HULLESS																				
CDC Carter ❀	2	R	97-	(45)	97	99	94-	XX	M	62	39	77	VG	VG	VG	VP	P	G	F	F
CDC McGwire ❀ † *	2	R	93-	(107)	88-	93-	99	XX	M	61	39	80	VG	P	G	G	F	G	F	G
Falcon ❀ †	6	S	83-	(181)	72-	83-	91-	89	E	58	35	68	VG	P	G	F	F	F	F	VP
Millhouse ❀ †	2	R	84-	(35)	85-	86-	80-	XX	M	57	42	87	F	VP	G	F	P	P	P	F
Tyto	6	S	84-	(72)	76-	80-	96	96	M	55	39	73	VG	VP	VG	F	P	F	VP	P

Remarks: General Purpose barley varieties are described as follows: 1) General Purpose varieties - standard height; 2) Semi Dwarf - varieties shorter than standard General Purpose varieties and 3) Hulless - Hulless General Purpose type. In hulless varieties comparable yields are 9-12% lower. Hulless seed is more susceptible to damage than hulled seed, so handling should be minimized. CDC Carter, CDC McGwire and Millhouse are normal starch hulless barleys suitable for food use. Two row FB205 and six row BT584 - insufficient information to describe. ❀ - Plant Breeder's Rights. ▲- Plant Breeder's Rights applied for. † - Flagged for removal. * - Varieties have limited data compared with AC Metcalfe. XX - insufficient data to describe.

[1] Awn types describe as R = rough, S = smooth and SS = semi-smooth. [2] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for AC Metcalfe are reported in the Overall and Low, Medium, High, and Very High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results. [3] Yield are reported relative to AC Metcalfe. Varieties that are statistically higher (+) or lower (-) yielding than AC Metcalfe are indicated. No symbol after the yield figure indicates that there is no statistical difference. [4] Maturities rated as: VE = Very Early; E = Early; M = Medium; L = Late and VL = Very Late. Long term average days to maturity for AC Metcalfe is 95 days and rated as Medium maturing (M). [5] Thousand Seed Weight. [6] Resistance Ratings: VG = Very Good; G = Good; F = Fair; P = Poor and VP = Very Poor. Varieties having a rating of Fair (F) or Poor (P) to loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for plant infection.

OATS

Variety	Overall Yield	Overall Station Years of Testing	Yield Category [1] (% CDC Dancer)				Agronomic Characteristics					
			Low < 70 (bu/ac)	Medium 70 - 100 (bu/ac)	High 100-130 (bu/ac)	Very High > 130 (bu/ac)	Maturity Rating [3]	Test Weight (lb/bu)	TSW [4] (g)	Height (cm)	Resistance to Lodging [5]	Resistance to Smuts [5]
MILLING												
CDC Dancer (bu/ac)	**95**		**50**	**86**	**116**	**146**						
CDC Dancer [2]	**100**	**(98)**	**100**	**100**	**100**	**100**	**E**	**41**	**37**	**93**	**G**	**VG**
AC Juniper	103+	(80)	100	102	105+	103	E	41	38	94	VG	F
AC Morgan	112+	(93)	109+	112+	110+	118+	M	40	41	92	VG	F
Bradley ▲	104+	(31)	XX	103	108	106	E	39	39	92	VG	VG
Cascade	102+	(159)	103	102	102	101	E	39	37	100	G	VP
CDC Big Brown ❀	106+	(21)	XX	105	XX	110+	M	41	39	100	G	VG
CDC Boyer	102	(89)	103	103	100	105	M	39	42	101	G	P
CDC Minstrel ❀	103+	(51)	99	103+	103	105+	M	39	38	89	VG	VG
CDC Orrin ❀	109+	(52)	113+	107+	107+	XX	M	41	40	84	G	VG
CDC ProFi †	93-	(30)	98	94-	94	87-	M	38	41	80	G	P
CDC Weaver ❀	104	(44)	108+	103	100	100	M	40	43	91	F	VG
Derby	101	(79)	103	102	96-	105	L	41	39	103	G	P
Jordan ❀	112+	(36)	112+	109+	117+	XX	VL	38	44	87	G	VG
Leggett ❀	95-	(40)	97	93	93-	XX	M	41	39	88	G	VG
Ronald ❀	97-	(55)	98	92	98	101	M	41	37	83	VG	VG
SW Betania ❀ †	102	(43)	106+	104	97	XX	E	40	39	88	G	G
Triactor ❀	110+	(43)	109	106+	114+	110+	M	38	39	88	G	VG
FEED												
AC Mustang *	114+	(104)	119+	112+	110+	117+	L	42	38	103	G	F
Lu *	100	(54)	99	98	99	110	VE	41	39	84	G	VG
FORAGE												
CDC Baler *	99	(42)	97	106	96	XX	L	40	43	99	XX	VP
Murphy ❀ *	95-	(51)	93	96	97	94	M	39	36	108	XX	VP

Remarks: Use higher seeding rates for large seeded varieties. CDC Seabiscuit and OT 2069 - insufficient data to describe. New varieties: CDC Seabiscuit (OT 3036) and CDC Morrison (OT 3044). ❀ - Plant Breeder's Rights. ▲ - Plant Breeder's Rights applied for. † - Flagged for removal. * These varieties have limited data compared to CDC Dancer and yields have been adjusted to CDC Dancer from Cascade.

[1] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields (bu/ac) for CDC Dancer are reported in the Overall and Low, Medium, High, and Very High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results. [2] Yields are reported relative to CDC Dancer. Varieties that are statistically higher (+) or lower (-) yielding than CDC Dancer are indicated. No symbol after the yield figure indicates that there is no statistical difference. [3] Maturities rated as: VE = Very Early; E = Early; M = Medium; L = Late and VL = Very Late. Long term average days to maturity for CDC Dancer is 98 days and rated as Early maturing (E). [4] Thousand Seed Weight. [5] Resistance to Lodging and Smuts Ratings: VG = Very Good; G = Good; F = Fair; P = Poor and VP = Very Poor.

SPRING TRITICALE

Variety	Overall Yield	Overall Station Years of Testing	Yield Category [1] (% Pronghorn)				Agronomic Characteristics							Disease Resistance [5]		
			Low < 60 (bu/ac)	Medium 60 - 80 (bu/ac)	High 80-110 (bu/ac)	V. High > 110 (bu/ac)	Maturity Rating [3]	Test Weight (lb/bu)	TSW [4] (g)	Height (cm)	Resistance to: [5] Lodging	Shattering	Sprouting	Loose Smut	Bunt	Fusarium Head Blight
Pronghorn (bu/ac)	**88**		**48**	**76**	**104**	**138**										
Pronghorn [2]	**100**	**(225)**	**100**	**100**	**100**	**100**	M	55	43	101	**G**	**G**	**F**	**VG**	**VG**	**G**
AC Ultima	100	(166)	101	100	99	101	E	56	45	97	G	G	F	VG	VG	F
Bumper ❀	102	(37)	111+	XX	98	92-	E	58	45	89	VG	G	F	XX	VG	P
Bunker ❀	90-	(49)	89-	94	87-	92-	VL	57	48	107	F	G	F	VG	VG	F
Companion	92-	(50)	94-	97	85-	89-	M	55	51	116	XX	XX	XX	VG	VG	XX
Sunray	94-	(26)	95-	XX	93-	XX	E	56	44	91	VG	G	F	VG	VG	P
Taza ▲	96-	(26)	94	XX	96	XX	M	57	45	99	**G**	**G**	**F**		VG	VP
Tyndal ❀	101	(53)	106	101	96	95-	L	57	44	97	G	G	P	VG	VG	P

Remarks: All varieties are late maturing compared to CWRS wheat (approximately five days later). Companion is a forage type. Bunker, Taza, and Tyndal are reduced-awn varieties. T200 - insufficient data to describe. Pronghorn yields about 30% more than AC Barrie (CWRS wheat) in areas of adaptation. Sunray has improved resistance to ergot. New varieties: Sunray (T204) and Taza (T198). ❀ - Plant Breeder's Rights. ▲ - Plant Breeder's Rights applied for.

[1] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for Pronghorn are reported in the Overall and Low, Medium, High, and Very High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results. [2] Yields are reported relative to Pronghorn. Varieties that are statistically higher (+) or lower (-) yielding than Pronghorn are indicated. No symbol after the yield figure indicates that there is no statistical difference. [3] Maturities rated as: VE = Very Early; E = Early; M = Medium; L = Late and VL = Very Late. Long term average days to maturity for Pronghorn is 112 days and rated as Medium maturing (M). [4] Thousand Seed Weight. [5] Resistance Ratings: VG = Very Good; G = Good; F = Fair; P = Poor and VP = Very Poor. Varieties having a rating of Fair (F) or Poor (P) to loose smut or bunt should be treated with a systemic seed treatmen to reduce the potential for plant infection.

FLAX

Variety	Overall Yield	Overall Station Years of Testing	Yield Category [1] (% CDC Bethune)				Agronomic Characteristics			
			Low < 20 (bu/ac)	Medium 20 - 35 (bu/ac)	High 35 -50 (bu/ac)	Very High > 50 (bu/ac)	Maturity Rating [3]	Seed Size	Height (cm)	Resistance to Lodging [4]
CDC Bethune (bu/ac)	**35**		**14**	**28**	**42**	**60**				
CDC Bethune [2] ❀	**100**	**(98)**	**100**	**100**	**100**	**100**	**L**	**M**	**58**	**VG**
CDC Arras †	94-	(27)	97	95	97	87-	L	L	61	F
CDC Sorrel ❀	104	(32)	112	107	98	99	L	L	61	G
Flanders	100	(43)	108	100	98	97	L	S	57	G
Hanley ❀	97	(35)	98	101	94	97	L	M	52	VG
NorLin †	95-	(92)	107	93-	93-	90-	M	M	57	G
Prairie Grande ❀	98	(42)	101	99	97	97	M	M	53	VG
Prairie Thunder ❀	99	(34)	106	95	97	XX	M	M	53	VG
Taurus ❀	98-	(27)	108	95	XX	XX	L	M	53	VG

REMARKS: Prairie Sapphire (FP2214) and FP2270 - insufficient data to describe. Macbeth dropped. FP2242 and Prairie Blue were tested in 2009 only. ❀ - Plant Breeder's Rights. † - Flagged for removal. XX - insufficient data to describe.

[1] Yield Test Categories are based on the site means for small plot trials. The defined range for each Yield Test Category is provided in bu/ac. The actual yields for CDC Betune are reported in the Overall and Low, Medium, High, and Very High Yield Test Categories. Note that small plot yields may be 10-15% higher than field scale results.

[2] Yields are reported relative to CDC Bethune. Varieties that are statistically higher (+) or lower (-) yielding than CDC Bethune are indicated. No symbol after the yield figure indicates that there is no statistical difference.

[3] Maturities ratings: VE = Very Early; E = Early; M = Medium; L = Late and VL = Very Late. Long term average maturity for CDC Bethune in Alberta is 111 days and rated as Late maturing (L).

[4] Resistance to Lodging: VG = Very Good; G = Good; F = Fair; P = Poor and VP = Very Poor.

DAPP

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Exova

Farm Soil Analysis

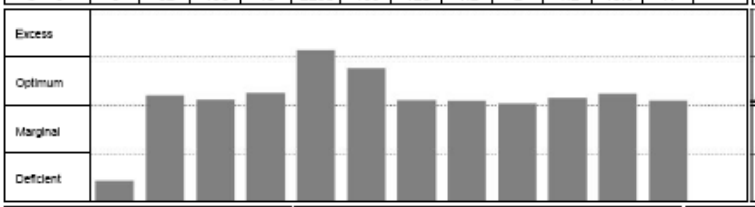
Bill To:	Gateway Research Organization	Grower Name:	Gateway	Lot Number:	803533
Report To:	Gateway Research Organization	Client's Sample Id:		Report Number:	1436876
	Box 5865	Field Id:	Dapp	Date Received:	May 16, 2011
		Acres:	3	Disposal Date:	Jun 15, 2011
	Westlock, AB., Canada	Legal Location:		Report Date:	May 18, 2011
	T7P 2P6	Last Crop:	Canola	Arrival Condition:	
Agreement:	4672				

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	BICarbP
0" - 6"	9	32	193	10	2280	199	120	1.2	2	1.2	13.6	17	

Soil Quality

pH	EC(dS/m)	OM(%)	Sample#
6.1	0.28	3.7	3685812



Alkaline	*Very Toxic*	*High*
Neutral	*Toxic*	*Normal*
Acidic	*Caution*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	17	64	387	21
Estimated lbs/acre	35	64	387	43

Texture n/a Hand Texture n/a
Sand n/a Silt n/a Clay n/a
Ammonium n/a

BS 75.0 %
Ca 63.2 % Mg 9.1 % Na <0.7 % K 2.8 %
TEC 18.0 meq/100g Na <30 ppm

Lime 1.4 T/ac Buffer pH 6.6 Est. N Release n/a C:N Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Wheat - HRS					Barley - Malt				
Macro-nutrients	Yield	N	P2O5	K2O	S	Yield	N	P2O5	K2O	S
Growing Condition	bu/ac	To be added (lbs/acre)				bu/ac	To be added (lbs/acre)			
Excellent	72	130	24	28	0	90	67	18	21	0
Average	52	114	14	17	0	70	47	12	15	0
Your Goal	120	170	45	55	0	140	117	32	39	0
Removal Rate (Seed/Total)	120	180 / 256	72 / 88	48 / 192	12 / 30	140	148 / 214	64 / 85	49 / 204	14 / 25
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Comments:

Recommendations are based on general research consensus. They should not replace responsible judgement.

NEERLANDIA

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Exova

Farm Soil Analysis

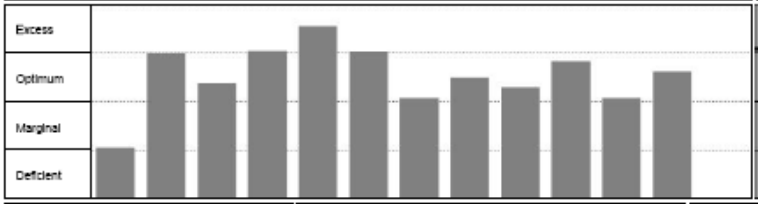
Bill To:	Gateway Research Organization	Grower Name:	Gateway	Lot Number:	803533
Report To:	Gateway Research Organization	Client's Sample Id:		Report Number:	1435678
	Box 5865	Field Id:	Neerlandia	Date Received:	May 16, 2011
		Acres:	3	Disposal Date:	Jun 15, 2011
	Westlock, AB., Canada	Legal Location:		Report Date:	May 18, 2011
	T7P 2P6	Last Crop:	Canola	Arrival Condition:	
Agreement:	4672				

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	BiCarbP
0" - 6"	20	>60	280	30	6000	386	83	2.9	6.6	3.0	5.4	64.8	

Soil Quality

pH	EC(dS/m)	OM(%)	Sample#
7.7	0.94	8.5	3685811



Alkaline	*Very Toxic*	*High*
Neutral	*Toxic*	*Normal*
Acidic	*Caution*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	41	120	560	60
Estimated lbs/acre	84	120	560	123

Texture n/a Hand Texture n/a
Sand n/a Silt n/a Clay n/a
Ammonium n/a

BS 100 %
Ca 87.6 % Mg 9.3 % Na 1 % K 2.1 %
TEC 34.2 meq/100g Na 80 ppm

Lime 0 T/ac Buffer pH Not Required Est. N Release n/a C:N Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Wheat - HRS					Barley - Malt				
Macro-nutrients	Yield	N	P2O5	K2O	S	Yield	N	P2O5	K2O	S
Growing Condition	bu/ac	To be added (lbs/acre)				bu/ac	To be added (lbs/acre)			
Excellent	72	92	0	0	0	90	25	0	0	0
Average	52	76	0	0	0	70	5	0	0	0
Your Goal	120	131	0	0	0	140	75	0	0	0
Removal Rate (Seed/Total)	120	180 / 256	72 / 88	48 / 192	12 / 30	140	148 / 214	64 / 85	49 / 204	14 / 25
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Boron level may be toxic					Boron level may be toxic				

Comments:

Recommendations are based on general research consensus. They should not replace responsible judgement.

STONY PLAIN

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Farm Soil Analysis

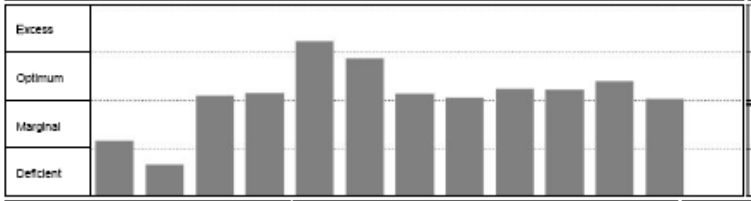
Bill To:	Gateway Research Organization	Grower Name:	Gateway	Lot Number:	803533
Report To:	Gateway Research Organization	Client's Sample Id:		Report Number:	1435878
	Box 5865	Field Id:	Stony Plain	Date Received:	May 16, 2011
		Acres:	3	Disposal Date:	Jun 15, 2011
	Westlock, AB., Canada	Legal Location:		Report Date:	May 18, 2011
	T7P 2P6	Last Crop:	Canola	Arrival Condition:	
Agreement:	4672				

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Bicarb P
0" - 6"	22	10	186	9	3160	225	160	1.0	5.6	1.4	21.0	10	

Soil Quality

pH	EC(dS/m)	OM(%)	Sample#
5.9	0.35	7.2	3685813



Alkaline	*Very Toxic*	*High*
Neutral	*Toxic*	*Normal*
Acidic	*Caution*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	45	20	372	18
Estimated lbs/acre	91	20	372	38

Texture n/a Hand Texture n/a
Sand n/a Silt n/a Clay n/a
Ammonium n/a

BS 63.7 %
Ca 55.1 % Mg 6.4 % Na 0.6 % K 1.7 %
TEC 28.7 meq/100g Na 40 ppm

Lime 4.1 T/ac Buffer pH 6.0 Est. N Release n/a C:N Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Wheat - HRS					Barley - Malt				
Macro-nutrients	Yield	N	P_2O_5	K_2O	S	Yield	N	P_2O_5	K_2O	S
Growing Condition	bu/ac	To be added (lbs/acre)				bu/ac	To be added (lbs/acre)			
Excellent	71	76	46	28	0	90	25	40	21	0
Average	51	59	37	17	0	70	10	34	15	0
Your Goal	120	118	69	55	0	140	75	56	39	0
Removal Rate (Seed/Total)	120	180 / 256	72 / 88	48 / 192	12 / 30	140	148 / 214	64 / 85	49 / 204	14 / 25
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Comments:

Recommendations are based on general research consensus. They should not replace responsible judgement.